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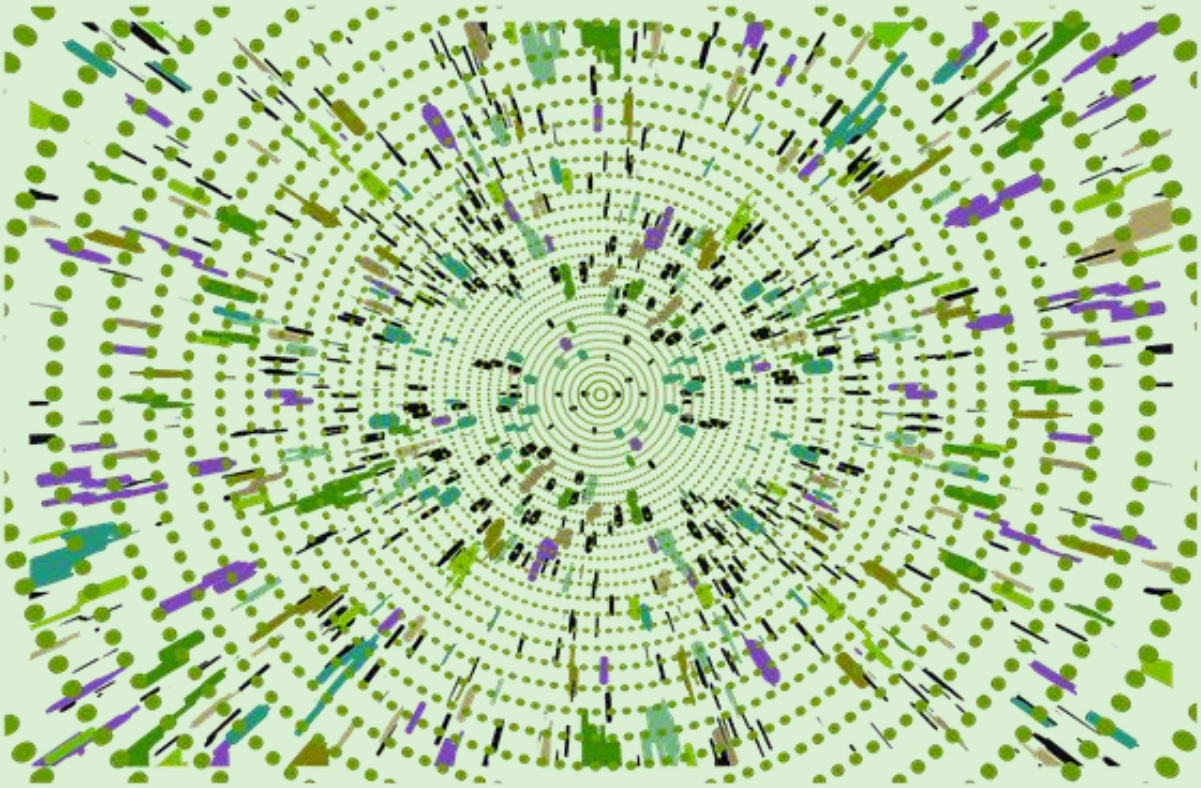

ACHSM | Australasian College of Health Service Management

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PRESIDENT MESSAGE

WELCOME TO THE FIRST ISSUE OF THE COLLEGE'S ASIA PACIFIC JOURNAL OF HEALTH MANAGEMENT FOR 2024.

Dr Neale Fong FCHSM

President of Australasian College of Health Service Management

The College is going from strength to strength with membership increasing notably over the past few months and great attendance at College free webcast events as well as growing participation in other ACHSM professional development opportunities.

In March a very successful one day Conference was held in Auckland, New Zealand with many from Australia and nearby countries amongst the more than 250 who attended this event. Through attending that conference, we now have 58 new College members in New Zealand who can take advantage of the benefits of College membership like this Journal, free webcasts, local networking events and access to bespoke professional development for health leaders.

Our Fellowship Program for 2024 has commenced with 46 Associate Fellows applying themselves to our most prestigious capstone program. Further we have over 30 current enrolments to undertake Certification with those College members committing to maintaining their profession through the expectations of this credential. We also launched a Managing Digital Health micro credential that aligns fully with the digital health competencies in the ACHSM Master Health Service Management Competency Framework.

We are in the process of distributing digital badges to all membership levels and Certified Health Managers and Executives for use on media such as LinkedIn, CVs and email signatures. These badges provide and outline of what it means to be a Fellow, Certified Health Manager or Executive of ACHSM.

In this issue, as is the purpose of the Journal, there are learned articles on the importance of continuing to self-reflect on our leadership behaviours and workplace relationships. I take this opportunity of thanking Prof Mark Avery our Editor for his great work in maintaining a high quality of publication and ensuring relevancy to leaders in all sectors. I commend these to you and continue to wish you success in your ongoing leadership journey.

Dr Neale Fong
President of Australasian College of Health Service Management

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EDITORIAL

LEADERS, FOLLOWERS AND DEPTH OF CONNECTION

Dr Mark Avery[1], Mindaugas Stankunas[2]

1. Editor-in-Chief, Asia Pacific Journal of Health Management
2. Lithuanian University of Health Sciences

Leading and leadership are fundamentally about relationships between a leader and those who want to follow to achieve directions through an influencing relationship [1]. Critical relationship issues involve trust, communication and mutual respect. In healthcare, how these issues are nurtured and managed enhances teamwork, quality, productivity and impact or success of organisation and systems.

A key aspect of the leadership process is for leaders and followers to engage effectively and constructively to achieve the articulated goals and objectives set out by the leader(s). Various leadership styles articulate the mechanisms and ways of leaders and followers connecting. An interesting way of looking at how a leader might relate to a team or group is to consider social identity theory.

Social identity can be defined as an individual's knowledge that they belong to a certain social group together with having some emotional and value significance for group membership [2]. According to Hogg (2001), this social identity can be specified by self-categorisation [3]. This means that the social world is divided into ingroups and outgroups. This accentuates similarities among people in the same group and differences between people from different groups. It has been well researched that ingroup members are liked more and liking increases compliance with requests. Simply, if you like someone, you are more likely to agree with them and comply with requests. From the social identity theory perspective, leadership emergence is the degree to which a person fits with the identity of the group [3]. Therefore, there is a need to acknowledge, that group members as followers play a significant role in configuring the characteristics of their group's leadership or even creating leadership itself [4]. Our understanding of leadership is incomplete without an understanding of followership [5]. For many years leadership training and research were focused on leaders. However, social identity theory emphasises the importance of investigating followership. Therefore, now research has shifted from a focus on individuals to exploring followership behaviours as they help to co-construct leadership processes. Understanding motivation and composition of follower groups in the clinical environment can serve to inform more effective leadership, cohesive teamwork and ultimately enable better patient care [6].

Healthcare leaders can significantly influence team dynamics and organisational culture by understanding and using how individuals' identification with specific social groups shapes their behaviour and perceptions. For healthcare leaders, this understanding can be crucial for fostering group cohesion and effective communication. Leaders who recognise the importance of social identities can create an inclusive environment, mitigating biases and promoting diversity. This approach may not only enhance team collaboration but also improves conflict resolution, as leaders can address any intergroup tensions more effectively.

Leaders in health who respect and value the social identities of their team members can enhance motivation and role satisfaction. Followers who feel their identity is acknowledged and understood are more likely to be engaged and loyal to the organisation. This sense of belonging translates into better patient care, as culturally competent leaders can deliberately address diverse patient needs. Through the promotion of strong shared professional identity, leaders can enhance

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interprofessional collaboration. The endgame being a more cohesive and productive care delivery environment.

Change in healthcare is dynamic, and leaders can drive change in organisations by leveraging elements of social identity to strongly align values with diverse social identities within work and volunteer forces and more widely with stakeholders. Understanding these identities helps anticipate and manage resistance to change, ensuring smoother transitions and greater buy-in from employees. Leaders can improve public health initiatives and overall organisational effectiveness by building trust within the community and enhancing patient care through cultural competence.

Mark Avery
Editor-in-Chief

Mindaugas Stankunas
Lithuanian University of Health Sciences

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COMMENTARY

PERSON-CENTRED HEPATITIS C VIRUS TREATMENT IN COMMUNITY SETTINGS

Davoud Pourmarzi

National Centre for Epidemiology and Population Health, Research School of Population Health, College of Health and Medicine, Australian National University

Correspondence: davoud.pourmarzi@anu.edu.au

ABSTRACT

The World Health Organization (WHO) has set a target to eliminate the Hepatitis C virus (HCV) as a public health threat by 2030. To achieve this, HCV treatment needs to be accessible through primary health care providers in community settings. In Australia, general practitioners and nurse practitioners can prescribe nearly free direct-acting antiviral (DAA) medication. However, there are still many barriers to the provision of HCV treatment in community settings. Considering the characteristics of HCV infection, people with HCV, and the Australian primary health system, person-centred HCV treatment is suggested to improve treatment uptake and adherence. Although the provision of person-centred HCV treatment in community settings is emphasised, the characteristics of these models are not well described. This short report describes the characteristics of person-centred HCV treatment in community settings to inform policy and practices in supporting HCV elimination. The characteristics were developed based on the analysis of findings of studies conducted by the author using person-centred care framework. The studies included a mixed methods systematic literature review, a Delphi study, and a mixed methods case study on a community-based model of care for treating HCV.

KEYWORDS

Hepatitis C, elimination, primary health care, person-centred care.

INTRODUCTION

In May 2016, WHO's first-ever viral hepatitis strategy was announced, and Hepatitis C virus (HCV) infection has been targeted to be eliminated as a public health threat by 2030 [1, 2]. The introduction of highly tolerable and effective direct-acting antiviral (DAA) medication provides opportunities for the provision of HCV treatment in community settings to achieve the WHO's aspiration for HCV elimination [1, 2]. Community-based models for treating HCV are defined as providing HCV treatment outside of the hospital through primary health care providers to remove barriers related to accessibility and acceptability associated with tertiary centre based HCV treatment [1, 2]. In Australia, the listing of DAA medications on the Pharmaceutical Benefits Scheme (PBS) in 2016 improved HCV treatment uptake. However, the number of treated people decreased from 33,202 in 2016 to 5,205 in 2022. The proportion of discontinuation of treatment increased from about 6% in 2016 to 12% in 2022 [3]. These are observed despite the implementation of different general practitioner and nurse practitioner led models for treating HCV in community settings [4]. The decreased number of people initiating HCV treatment and increased number of discontinuations of treatment are considered threats to achieving HCV elimination by 2030 in Australia [5].

There is stigma associated with HCV infection and people with HCV often have a recent history of injecting drug use, suffer from psychiatric comorbidities, experience homelessness, and have a history of imprisonment [6, 7]. Considering the characteristics of HCV infection, people with HCV, and the Australian primary health system provision of person-centred HCV treatment in community settings is emphasised to improve treatment uptake and adherence [8]. However, the characteristics of such treatment are not well described.

This short report aims to describe the characteristics of person-centred HCV treatment in community settings to inform policy and practices in supporting HCV elimination. These characteristics were developed based on the analysis of findings of three studies conducted by the author [4, 8-12] using person-centred care framework [13]. The studies included a mixed methods systematic review on community-based models for treating HCV, a Delphi study with experts from Australia to identify the key organizational and operational elements of community-based models for treating HCV, and a mixed methods case study on a community-based model of care for treating HCV which included reports of health and health service outcomes and barriers to and enablers of the provision of HCV treatment in community settings [4, 8-12].

Person-centred care is described differently in different contexts. However, all descriptions emphasise shared power in the relationship between person and health care provider in the decision making and treatment planning [14]. The framework used to analyse the findings of studies was based on the descriptions provide by Stewart et al [13]. The description includes six interconnected components: 1) exploring both the disease and the person's experience of illness, 2) understanding the whole person, 3) finding common ground regarding HCV treatment, 4) enhancing the person and healthcare provider relationship, 5) incorporating prevention and health promotion, and 6) being realistic [13].

EXPLORING BOTH THE DISEASE AND THE PERSON'S EXPERIENCE OF ILLNESS

An emphasis on the clinical signs and symptoms of HCV may not be enough to convince or motivate people to initiate treatment as they are often asymptomatic or may attribute experienced symptoms to the use of drugs and alcohol [11]. This may be exacerbated by lack of knowledge about HCV [11]. Thus, there is a need to clearly differentiate between HCV infection as a defined medical problem and the individual's experience of illness [4, 11]. A person-centred approach involves exploring feelings, ideas, functions and expectations of individual in conjunction with the biological aspect of the disease [15]. Exploring feelings, especially fears regarding HCV [10, 11], can help primary care providers to understand the psychological and emotional impacts of HCV on a person's life. People with HCV may be concerned about dying from HCV and infecting their family members [11]. They may also experience stigma, shame, or guilt due to having a blood-borne virus acquired through injecting drugs [11]. Primary care providers need to consider a person's ideas about the disease and symptoms and the meanings they ascribe to them and investigate the effects of experienced illness on a person's daily activities [15]. A majority of people in Australia acquire HCV through sharing ancillary injecting equipment and most of them are aware of the route of contracting HCV [16]. If drug use is considered an illegal and socially deviant activity, people might consider HCV infection as a punishment for their use [17]. This idea needs to be fully considered and support provided to improve healing and engagement with HCV treatment.

Understanding what people want from HCV care providers can help to ensure effective and acceptable HCV treatment plans. Primary care providers need to understand the person's expectations of consultation and access to HCV treatment. People want to be clear of the virus, which they consider a source of shame in their life [10, 11]. They need to have access to safe environments where they are respected and empowered [4, 9-11]. Considering the characteristics of people with HCV, they also need to have access to the required support and be fully informed about medicines and the treatment processes [11].

UNDERSTANDING THE WHOLE PERSON

Considering the context in which the person is living is a hallmark of person-centred health care [15]. People with HCV need to be seen as people living in a community, who may be members of a family and have family commitments [11]. Primary care providers need to understand the many other factors that influence people's experience of having HCV and their ability to initiate and adhere to a treatment plan. For example, people who are using drugs, cycling through the criminal justice system, experiencing homelessness and struggling with many psychosocial and economic problems may not consider

fatigue and mild depression as a serious problem that needs to be treated [10, 11]. They may be more strongly compelled to consider treatment when witnessing HCV consequences (e.g., a friend or family member suffering or dying from HCV); are concerned about infecting family members; or are informed that they have access to free, safe and effective medicines and psychosocial support [11]. In these complex situations, primary care providers need to consider these factors and help persons to manage competing priorities to enhance their ability to initiate treatment and adhere to the treatment plan.

FINDING COMMON GROUND REGARDING HCV TREATMENT

People with HCV should be actively involved in treatment planning. Primary care providers need to work with the individual to define the problem, establish the goals and priorities of the treatment, and clearly define roles and responsibilities [15]. Disagreement between the healthcare provider and person about the definition of the problem, the goal of treatment, and their roles and responsibilities may result in treatment management failure [11].

Considering the characteristics of HCV infection and the people with HCV, finding a definition or understanding of HCV infection that is agreed by both person and primary care provider is an essential step to progress the treatment planning [15]. To achieve an agreement on the definition of HCV infection, HCV care providers need to understand that the problems the person is experiencing relate not only to the clinical signs and symptoms but also to emotional, social and other considerations [11]. The agreed understanding may encourage people to be involved in the process of and adhere to HCV treatment; thus, helping primary care providers to easily manage patients' treatment [15].

When an agreed definition is achieved, the primary care provider and the person need to work together to develop achievable goals and priorities [15]. The goals of HCV treatment are clearing HCV from the person's body, preventing re-infection, and healing the person's experienced illness [10, 11]. These goals and their priority need to be fully understood by both the HCV care provider and the person [10, 11]. People with HCV need to be informed about the cure rate of DAA medications and the duration of treatment, monitoring tests, and any side effects [18].

The final part of finding common ground regarding HCV treatment is defining the person and the HCV care provider's responsibilities and roles. To find common ground, the power in the relationship between the HCV care provider and the person with HCV needs to be balanced. These responsibilities need to be mutual, defined and agreed upon by both patients and primary care providers [15]. Primary care providers need to clearly explain when and where patients can fill scripts; how the medicines need to be taken; the duration of treatment; the importance of adherence to treatment, monitoring, and final sustained virological response (SVR) tests; and the importance of being in contact with primary care providers during treatment [11, 18]. People with HCV need to be convinced that SVR is an important part of treatment that allows them to be sure that they are clear from the virus.

ENHANCING PERSON AND HEALTHCARE PROVIDER RELATIONSHIP

Community-based models for HCV treatment need to consider the importance of the person and health care provider relationship and emphasize the enhancement of this relationship to achieve the goal of HCV elimination. Improving knowledge about HCV and its treatment is essential but this needs to be done in conjunction with empowering people to negotiate treatment options with their primary care providers. An unbalanced relationship can prevent people from asking for treatment and negatively affect the expansion of access to HCV treatment in community settings [11]. This can also increase the risk of loss to follow-up as people may not feel that they have the power to discuss their situation and ask for support to adhere to the treatment when it is needed [4, 10-12].

Community-based HCV treatment needs to consider the importance of the long-term engagement of people with the health service to improve their quality of life. By considering people's characteristics and their lack of access to health services, primary care providers can utilize the opportunities created through HCV treatment to engage people in long term health care [4, 9-12]. This is especially highlighted for people with ongoing risky behaviour (e.g. sharing ancillary injecting equipment) and cirrhosis.

INCORPORATING PREVENTION AND HEALTH PROMOTION

Incorporating harm reduction and health promotion in HCV treatment is a required cornerstone of HCV elimination [8, 9]. An understanding of the person's world, collaboration with the person to find common ground, and

enhanced person and healthcare provider relationship can maximise people's contribution to their self-care and avoidance of harm [10, 11].

People need to fully understand that curing HCV does not protect them from re-infection. Risky behaviours, such as sharing ancillary injecting equipment and ability to practice harm reduction, need to be assessed. It is important that HCV care providers are aware of available harm reduction and drug and alcohol services and encourage patients to access such services when required [8, 9, 11]. For people who may be reticent to access these services, service characteristics (e.g. being free of charge and non-judgmental) should be discussed [4, 11]. It needs to be acknowledged that some people may not be willing to engage with harm reduction or drug and alcohol services [18]. In such cases, primary care providers should be able to provide advice about harm reduction strategies. Developing collaborations with harm reduction and drug and alcohol services can be helpful to incorporate harm reduction in HCV treatment [8, 9, 19]. In terms of health promotion, as many people with HCV suffer from multiple comorbidities and challenges, including mental health problems and social instability [4, 11], it is important that HCV care providers are aware of the availability of mental health and social support services and connect people with such services when needed [4, 8, 9, 11]. This connection can help to improve people's ability to engage with HCV treatment and their quality of life.

BEING REALISTIC

Providing person-centred HCV treatment in the community setting is not without challenges. The design of community-based models needs to recognise the barriers and utilise enablers [11]. To provide person-centred HCV treatment, providers may need to spend more time with some people. The workload and busyness of practices may be an obstacle to providing person-centred HCV treatment. There are some possible strategies to address this. There is the "long consultation item" available through the Medicare Benefits Schedule that HCV care providers can use for the coverage of person-centred HCV consultation [20]. Further, the use of several visits over time for exploring the person's world can be an effective method to manage the duration of the consultation.

Providing person-centred HCV treatment needs collaboration with other related services such as harm reduction, drug and alcohol, mental health and social services [4, 8, 9]. Developing collaboration with these services may be seen as a challenging area for some primary care providers. Considering the culture of these services, which emphasise the social aspects of their clients, person-centred HCV treatment offers a common language for providers to effectively communicate with these services. This can facilitate the development of further collaborations. Further work needs to be done to overcome bureaucratic, logistical and economic barriers to establishing a collaborative team for HCV care.

Loss to follow up is an important issue in HCV treatment. Availability of point-of-care testing [21] and incentivising testing and continuation of treatment can be helpful for some people to improve their engagement with HCV treatment and adherence to the treatment plan [22].

The use of information technology in person-centred HCV treatment is an important area. With the consideration of characteristics of people with HCV, the use of short messages or emails may not be effective for all people. For some people, telephone calls or letters can be effective communication tools to remind them of their next appointments, blood tests, and filling of scripts [4, 8, 23]. Considering people's mobility, HCV care providers need to consider multiple ways to contact the patients. It also needs to be understood that some people may not be able or willing to use information technology. Confidentiality and privacy issues related to the use of information technology in person-centred HCV also needs to be considered.

CONCLUSION:

Providing person-centred care for treating HCV in community settings can improve treatment uptake and adherence. To provide person-centred care, primary care providers need to explore HCV as a defined disease and a person's experienced illness, understand the whole person, collaborate with the individual to find common ground for treatment planning, and incorporate prevention and health promotion in HCV treatment. It is also essential that the person and HCV care providers have equal power in their relationship to ensure engagement in the provision of HCV treatment and long-term health care.

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VIEWPOINT ARTICLE

THERE IS A NEED TO FURTHER STRENGTHEN CLINICAL SYSTEM GOVERNANCE

Dinesh K Arya

Department of Health, Tasmania, Australia

Correspondence: dinesh.arya@health.tas.gov.au

ABSTRACT

The introduction of general management in healthcare has enabled the development of elaborate general management and corporate governance structures. This is supported by significant resourcing and complex committee structures.

Whereas healthcare has seen the development of a whole new general management industry to `manage' healthcare, clinical system governance over matters to do with clinical care delivery, quality and safety have not attracted the same amount of attention and resourcing. There is an opportunity to use available expertise within healthcare systems to clinically govern clinical care delivery, quality and patient safety.

KEYWORDS

Governance, clinical governance, healthcare management.

INTRODUCTION

At least in the English-speaking world, the watershed point in terms of how health services are led and managed was the introduction of general management in health services following the Griffith Review in the United Kingdom in 1983 [1]. A thought bubble to bring in a generic manager to manage the performance of health service was embraced at that time by the then government to manage peculiar issues that had plagued the United Kingdom's National Health Service [2]. Ironically, this recommendation was made without any supporting analysis and inquiry was only into "the effective use and management of manpower and resources [1]." However, this management concept was quickly embraced by similar health systems, including New Zealand and Australia. The management of technically sophisticated and complex healthcare systems moved into the hands of non-technical administrators and managers.

Whether clinical governance needs of healthcare organisations can be undertaken by a generic management structure is the question at the heart of this issue. Not everyone agrees it can. Moreover, this realisation started very soon after the introduction of these reforms [3, 4].

WHY THE INTEREST IN GENERAL MANAGEMENT OF CLINICAL CARE?

The significant finding made by Griffith's review was that no identified individual could be identified who was `in-charge,' or in other words, was accountable for the management of the health services in the United

Kingdom's National Health Service then. This finding led to the recommendation that general managers be appointed. Indeed, since Griffith's review, non-clinical chief executive officers, including non-clinical chief officers at health service and health policy levels have become quite acceptable. Layers of new structural entities have been created, bureaucratic general management support structures have been developed and an army of managers appointed. To have those single points of accountability, boards of governance have been established.

Whereas the introduction of general management was widespread and seen to be an attractive remedy to address the perception of doctors in pre-Griffith's National Health Service in the United Kingdom as "professional monopolists and the dominant power group systems" [5], it also allowed the dismantling of "consensus management" that may have been seen as a reason for the absence of a single person-in-charge.

In New Zealand, 'Service Management' structures described as innovative, were introduced in the late 1980s (Malcolm, 1990). This occurred as part of wider reform of the management of government services implemented through the State Services Act of 1988. The 1993 health reforms further necessitated the health provider organisations to run on 'business lines' and with a profit motive, and therefore, formalised the position of business managers at the helm of each service [6]. In Australia, similar managerial reforms occurred although were framed differently owing to its structure of government and separation between federal (national) and state and territory government responsibilities, and how primary care is funded and managed through private providers. Nevertheless, the introduction of managerialism in the 1990s through programme structures, programme budgeting and performance measurement necessitated the transition to generic managers to manage health services [7].

WHY CLINICAL SYSTEM GOVERNANCE NEEDS SIMILAR RIGOUR AS GENERAL MANAGEMENT AND CORPORATE GOVERNANCE?

Griffith's review also made another important observation that clinicians needed to be more closely involved in making decisions about priorities in the use of resources [1]. It must be noted that with significant management failures of the health system [8-11] there was a flurry of excitement about the necessity for good clinical system governance and the need for clinician decision-makers to govern the system, however, it seems this dissipated as quickly as the media moved on to yet another story. Whereas general management and corporate governance have continued to evolve and strengthen, an advisory hands-off role for clinicians to `advise' on clinical system governance matters has somehow been seen to be quite sufficient. It is a pity that despite the realisation that clinicians must have clinical system governance responsibility, their role has remained limited to advising the generic management, but without specific accountabilities for clinical care delivery, quality or patient safety. Literature on health governance continues to play with the idea that health system failures were perhaps a failure of boards and senior management to fulfil their responsibility to respond to issues [12, 13].

It is interesting that even though spectacular health system failures pointed to the need for clinicians to lead and govern, the system architects of the healthcare system have continued to refer to the role of clinical governance to continuously improving quality foreshadowed in much-quoted early definition of clinical governance - "a system through which NHS organisations are accountable for continually improving the quality of their services and safeguarding high standards of care by creating an environment in which excellence in clinical care will flourish [14]." Whereas the absence of one person "in-charge", very appropriately became an opportunity to remedy a systemic deficit in the management of health service, accountability for clinical governance remains diffuse and disorganised. Despite stark warnings that "if clinical governance is to be successful it must be underpinned by the same strengths as corporate governance: it must be rigorous in its application, organisation wide in its emphasis, accountable in its delivery, developmental in its thrust, and positive in its connotations" [14], healthcare systems have struggled to appreciate the gravity of such warnings.

Following yet more health system failures there have been cautious attempts to expand the definition to conceptualise a system that can provide "assurance and review of clinical responsibility and accountability that improves quality and safety" [15], however, a structure to ensure such responsibility and accountability be given to clinicians have remained unclear. Instead, it is even proposed that perhaps educational interventions to increase awareness of healthcare staff about patient safety and managerial intervention to improve the culture

of safety may be enough [16]. Rather than encouraging clinicians to provide much-needed clinical system governance and oversight to the clinical care system, clinicians remain sidelined with little accountability for improvement, innovation and patient safety. Whether this is because of bureaucratic interest in curbing the power of clinicians is a possibility [2, 17]. In any case, it does appear to be the reason why clinical system governance continues to be conceptualised within a general management system, almost with a desire to limit clinician involvement rather than ensuring they have this accountability.

CONCLUSIONS

Over the last three to four decades health management and corporate governance systems have evolved and matured, however, the development of necessary clinical system governance has remained unstructured and inadequate. This is likely a result of the conceptualisation of clinical system governance within the general management systems. Without structured clinical system governance, clinicians have also remained peripheral and often disenchanted and disengaged.

Clear accountabilities within an internal clinical system governance system have enormous potential for a clinical system to be effective, engage clinicians optimally and use their clinical skills and expertise. Not using this talent is a significant wasted opportunity.

A clinical system governance system must be conceptualised with similar rigour and resourcing as is allocated to service the general management and corporate governance systems in healthcare. For clinical governors to be effective, there must be a proactive investment in internal clinical networks. Accountabilities must be clear at all levels of the clinical system and clinical system governors must be intricately linked with the internal clinical system.

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VIEWPOINT ARTICLE

MENTAL ILLNESS - AN ILLNESS TO WELL-BEING TOWARDS CHILDREN: REFERENCE TO SOCIO-POLITICAL VIOLENCE IN LITERATURE

S. Sri Sakuntala[*1], *Sarakanam Srinivas*[2], *D. Sudarsana Murthy*[3], *Monika Gadre*[4], *Jolly Masih*[5]

1. Department of English, Koneru Lakshmaiah Education Foundation (Deemed to be University), Guntur, A.P, India
2. Department of CSE, Koneru Lakshmaiah Education Foundation (Deemed to be University), Guntur, A.P, India.
3. Department of Management, School of Management and Commerce, Brainware University, Barasat Campus, Kolkata, West Bengal, India
4. Assistant Professor, Dr. Vishwanath Karad MIT World Peace University, Pune, India,
5. School of Management, BML Munjal University, Gurugram, Haryana, India

Correspondence: 2002540002@kluniversity.in

ABSTRACT

This research paper explores the adverse impact of socio-political turmoil that has long been in existence in Assam society on the psyche of children with reference to Aruni Kashyap's The House with a Thousand Stories. The ethnic conflicts between the natives and the immigrants from other parts of India have caused several problems: loss of life and property, extra-judicial killings, and their resultant adverse impact on the socio-economic, cultural, and psychological spheres of the social lives of weaker sections in Assam.

This research aims to identify and understand the various psychological issues that children are subject to in a society when it is afflicted with socio-political turmoil and its consequent violence unleashed on people due to the armed struggle of the ULFA and the repressive administration of the state. The objectives of this research are (i) to study the characterization of Mamoni and Mridul, (ii) to understand and analyse the impact of socio-political turmoil on the psyche of children with reference to the above-chosen characters, (iii) to explore the connectivity between the narrative and the author's political inclination in the novel, and (iv) to understand how objectively the historical incidents were reflected in the novel. The research is carried out by studying the chosen primary source against the pragmatic concepts of psychologists, journalists, social activists, and significant historical facts that appeared in reliable data sources such as journals, web studies, newspapers, and other publications. In conclusion, this research sheds light on the profound psychological repercussions experienced by children in Assam society amidst socio-political turmoil, as exemplified in Aruni Kashyap's "The House with a Thousand Stories." By delving into the characters of Mamoni and Mridul, analyzing the intricate interplay between narrative and political inclinations, and objectively examining historical incidents reflected in the novel, this study not only enhances our comprehension of the multifaceted impact on the psyche of children but also contributes valuable insights for policymakers, educators, and communities striving to address and mitigate the enduring consequences of such tumultuous environments on the younger generation.

KEYWORDS

Ethnic conflict, socio-political turmoil, psyche of children, psychological trauma, historical incidents, weaker sections

INTRODUCTION

A wide variety of mental health conditions—disorders that impact human emotions, thinking, and behaviour are referred to as mental illnesses, sometimes known as mental health disorders. Depression, anxiety disorders, schizophrenia, eating disorders, and compulsive behaviours are a few examples of mental illnesses. Many people occasionally experience problems with their mental health. However, a mental health issue turns into a mental disease when persistent symptoms lead to persistent stress and impair your capacity to perform. Even wars and violence lead to heavy mental disorders in both men and women. The socio-political turmoil causes psychological trauma among people, and the impact of this trauma is worse in children. Children's conditiona are heart-rendering when they live in a place where armed conflict scenarios provide enormous challenges, including threats to their personal safety [1]. Aruni Kashyap is an Assamese writer who witnessed various chaotic socio-political circumstances in Assamese society and recorded the terrible social realities in his novel *A House with a Thousand Stories* in a realistic manner. The social life of the Assamese during the 1980s, 1990s and 2000s was mirrored through several personal untold stories of people; thus, "history is filled with political turmoil created by groups engaging in collective actions in an attempt to bring social change" [2]. The direct and indirect characterization of the characters tells us in which way people are obsessed with the fear of uncertainty under some circumstances. The purpose of the author is to reveal the atrocities conducted by the armed forces of the Government of India against the Assamese, resulting in various physical and mental traumas manifest among the people of Assam, especially children. Aruni Kashyap's novel is chosen for its cultural insight, contemporary relevance, realistic representation, characterization, historical reflection, and literary merit, all of which make it a compelling and relevant Assamese work for the research project [3].

In the story, Mamoni and Mridul are the victims of the socio-political turmoil as a result of the conflicts between the state and the ultra-political forces, resulting in ethnic problems. This aspect symbolizes the existing horrendous social reality - violence against the people.

LITERATURE REVIEW

Mental illness, or mental health disorders, encompasses a broad spectrum of conditions that impact one's mood, cognitive functions, and behaviour. Instances of mental illness encompass depression, anxiety disorders, schizophrenia, eating disorders, and addictive behaviours [4].

The consequences of war encompass enduring physical and psychological damage for both children and adults, alongside a depletion of material and human resources. Individuals commonly experience occasional mental health issues. However, these concerns escalate into mental illness when persistent signs and symptoms lead to frequent stress and disrupt one's ability to carry out daily functions. The World Health Organization (WHO) has stated that in situations of armed conflict, "Around 10 percent of the people who experience traumatic events will have serious mental health problems, and another 10 percent will develop behavior that will hinder their ability to function effectively" [5]. Encountering armed conflict in childhood and adolescence presents significant hazards to mental well-being and jeopardizes a child's developmental progress [6]. The establishment of PTSD as a recognized diagnosis was shaped by various social movements, including advocacy efforts from groups such as veterans, feminists, and Holocaust survivors. Throughout human history, exposure to traumatic events has been a common aspect of human experience, whether it encounters with saber-toothed tigers or modern-day acts of terrorism. Similar psychological responses are likely to have occurred in survivors of violence across different time periods. The earliest depictions of what we now recognize as posttraumatic stress disorder (PTSD) can be found in literary works. Notable authors such as Homer (The Iliad), William Shakespeare (Henry IV), and Charles Dickens (A Tale of Two Cities) explored traumatic experiences and the ensuing symptoms. The diagnosis of PTSD has played a crucial role in psychiatry by attributing its cause to events suffered by the individual rather than a perceived personal weakness, addressing an important gap in understanding and treating mental health issues [7]. Over the past fifty years, numerous wars and conflicts have unfolded, with several persisting to this day. Examples include the Israeli occupation, the Kashmir dispute, the Iraq invasion, the

Somali civil war, the Syrian civil war, the Yemen civil war, the Libyan civil war, and the ongoing Rohingya Crisis in Myanmar, all of which remain prominent subjects of conflict in contemporary media coverage. The UN mentioned in their website that, "In contemporary conflicts, up to 90 percent of casualties are civilians, mostly women and children" [8]. Subsequently, women and children have been identified as displaced individuals or refugees, as many regions affected by war and conflict have become unsafe for sustained habitation. The world has observed an unprecedented surge in the number of displaced people. Due to global warfare and conflicts, over 70.8 million individuals have been displaced, with a significant majority carrying refugee status [9]. Numerous children experience displacement, being separated from their families as their homes and schools are obliterated by bombings, and their parents and siblings fall victim to fires or other forms of destruction. Numerous children are born in war zones or refugee camps during times of conflict. These children are raised without enjoying the rights typically afforded to children and find themselves labelled as victims of war in a world that often prioritizes self-interest over their well-being. Children observe and absorb information from their surroundings, similar to how they learn a new language [10]. Children, being highly sensitive, are deeply affected by their emotional experiences, including feelings of joy or loneliness, which in turn impact their psychological well-being. Scientific studies on child development have established that low levels of peer acceptance or high levels of peer rejection have a negative and unbalanced effect on a child's psychology and behavior [11]. It is not unavoidable for children to be specifically targeted during conflicts, nor is it a natural consequence that indiscriminate attacks on children occur as a result of conflict. Frequently, parties engaged in warfare obstruct and refuse to provide essential assistance that could save children's lives. UNICEF (United Nations Children's Fund) is making the nations aware of the seriousness of the situation. It is urging to stop violence and brought several demands to rescue them. Cease deliberate and indiscriminate attacks causing harm and injury to children. Put an end to assaults on education, encompassing threats to students, teachers, and schools, as well as the military use of educational institutions. Terminate attacks on healthcare, including health personnel, hospitals, and health facilities. Eliminate assaults on water and sanitation facilities and their personnel. Refrain from deploying explosive weapons in densely populated areas due to their disproportionate and particularly harmful impact on children. Adhere to global commitments to establish a world free from the menace of landmines, explosive remnants of war, and improvised explosive devices. Discontinue the recruitment and deployment of children by armed forces and groups, along with the detention of children allegedly linked to such entities. Facilitate the release of children associated with armed forces or groups to protective services, aiding their reintegration into communities. This includes safely repatriating foreign children to their countries of origin when deemed in their best interests [12]. Bring an end to the abduction of children during conflicts. Combat all forms of sexual violence and other gender-based offences against children. Cease obstructing vital humanitarian assistance to children during emergencies and terminate attacks on humanitarian workers.

METHOD

This research employs a multi-faceted methodology that combines literary analysis with insights from psychology, journalism, social activism, and historical data. Here, multifaced involves the study of the diverse lens that includes theories that "recognise the diverse cultural, historical, and social contexts in which they were created" [13]. The primary focus is on Aruni Kashyap's novel, "The House with a Thousand Stories," which serves as a literary lens through which the adverse impact of socio-political turmoil on the psyche of children in Assam is explored.

Literary Analysis has taken place in the primary source for this research which is Aruni Kashyap's novel. A detailed examination of the characters Mamoni and Mridul is conducted to understand their direct and indirect characterization. "The analysis revolves around how literature aesthetically present and represent the terror occurrences by using writing as fertile instances of a poetics which grows out of the 'events' but goes beyond such traumatic events as a strategic mode of continuation and regeneration" [14]. The narrative structure and storytelling techniques are scrutinized to uncover the author's portrayal of the psychological impact of socio-political turmoil on the chosen characters connected with the psychological concepts. The study incorporates psychological concepts related to trauma and mental health. Insights from psychological literature are used to analyze the impact of socio-political turmoil on the psyche of children, focusing on trauma and related disorders. The next step connected with the Historical Context incorporates historical facts related to the socio-political situation in Assam during the

1980s, 1990s, and 2000s. Reliable data sources, including journals, web studies, newspapers, and publications, are consulted to objectively understand the historical incidents reflected in the novel which "according to the popular beliefs, is more reliable and holds more referential integrity than any other realist representation. But in the post-modern academic circles, historical documents are often scrutinised for its authenticity in representing historical facts" [15]. The author's Political Inclination is also carried out to explore the connectivity between the narrative in the novel and the author's political inclination. This involves an analysis of how the author's personal experiences and political views are reflected in the fictional representation of socio-political turmoil. The findings from the literary analysis are compared and contrasted with insights from psychologists, journalists, and social activists who have studied the impact of armed conflict on mental health, particularly in the context of children. The keyword analysis incorporates a keyword analysis, focusing on terms such as ethnic conflict, socio-political turmoil, the psyche of children, psychological trauma, historical incidents, and weaker sections. This aids in categorizing and contextualizing the research within relevant themes.

Overall, the methodology involves an interdisciplinary approach, combining literary interpretation with insights from psychology, history, and social sciences to comprehensively examine the adverse impact of socio-political turmoil on the psychological well-being of children in Assam, as depicted in Aruni Kashyap's novel.

THE SOCIO-POLITICAL CONTEXT OF HISTORY

Assam, a state in the northeastern region of India, is one of the most turbulent states in the country. Assamese identify as a separate ethnocultural community, believing that migration from other parts of the country will weaken their community. "This issue of illegal immigration has also given rise to the formation of various insurgent groups", thus resulting in the formation of the 'Assam movement in 1979' [19]. As a result, some Assamese felt insecure in their own state due to this social phenomenon. While these clashes took place in 1979, "the Assam Movement provided the platform for the growth of a secessionist force like ULFA (United Liberation Front of Assam)" [12], which is an armed separatist group active in the northeastern Indian state of Assam. Its objective is to achieve the creation of an independent sovereign nation-state for the indigenous Assamese population through armed resistance as part of the Assam conflict. Rather than settling this issue through peace talks, the Indian unitary government has prioritized law and order and national integrity. This unjustifiable manner resulted in conflicts in Assam to extreme levels. Perhaps the violence has shaken the grounds of Assam and led to violent attacks during the general elections. Singh recorded that the "2009 parliamentary poll was one of the bloodiest in Assam's political history" [13]. Even though violence has reduced in Assam, the problem still persists.

The government of India has deployed armed security forces in response to ULFA's violent behaviour against immigrants from other regions. Security forces unleashed their atrocities against innocent people brutally. Several incidents have taken place around the state. They raided people's homes and plundered their money and valuables. According to the report of the People's Union for Democratic Rights (India), the central armed forces were directed "to destroy any structure, to arrest anyone without a warrant and to search any premises"[8]. They killed innocent citizens and accused ULFA executives of crimes. Men were killed, and women were kidnapped and sexually abused. According to a 2010 Hindustan Times report, Hiren Gohain, the convenor of the Citizens Forum, sought to regulate harmony between ULFA and the state government. It was on "October 21, 2010", that "he met the ULFA members in Guwahati central jail negotiating the settlement of the issues" but in vain [18]. People's lives were terrible in the late 1980s, and this environment of social and political turmoil was reflected in Aruni Kashyap's, The House with a Thousand Stories. The devastating consequences of the ULFA's armed struggle, as well as the government's subsequent suppression, were vividly depicted in this novel.

THE HARMFUL IMPACT OF SOCIO-POLITICAL TURMOIL ON THE PSYCHE OF CHILDREN

Mamoni and Mridul are the characters in the novel who are subjected to psychological trauma against the backdrop of the ULFA movement's resurgence and the government's subsequent repression. Even if the socio-political turbulence greatly influences all residents, it impacts children more. Pooja Priyamvada opines that "sustained political violence may have long-term mental health effects" [17]. These two children experience uncertainty, fear, and anxiety resulting from the state's repressive tendencies. Commenting on the repercussions of the suppressive measures of the Indian Government, Prateek Sharma says, "India, with its ongoing agitation against the state perceived cultural, social and political persecution, is not immune to a mental health crisis" [19]. The depiction of the characterization of the two child characters mirrors this fact.

RESULTS AND DISCUSSION

THE PSYCHOLOGICAL PROBLEMS AMONG CHILDREN

Mamoni

Mamoni is the sister of Brikodar, who is the friend of Pablo, the narrator. She is the only girl-child in her family. She is a joyous girl and never felt misery in her life before the armed forces sexually assaulted her. She used to be very happy playing all the time in the village. This sexual assault remains her half-dead. The military men conducted raids to shut down the ULFA. ULFA terrorized the illegal immigrants by killing them, while the armed forces threatened the native Assamese by taking violent activities such as killing men and molesting women. This sort of socio-political turmoil is reflected in the life of Mamoni. These horrendous effects were happening everywhere in Assam during the 1990s. The Journalist of Assam Preview, Choudary, writes that "many political parties and people protested the killings after five persons of the Bengali community were shot dead by suspected United Liberation Front of Assam (ULFA) terrorists in Assam's Tinsukia district" [8].

Several extra-judicial killings and sexual assaults among children and women have occurred due to the state's policy of protecting law and order. This became a threat to civilians as they were frequently subjected to physical harassment and their lives haunted by the armed forces. Human Rights Violation in Assam reported that – in 1993, the "rapes of family members are common. The primary goal of these raids appears to be to frighten villagers into identifying suspected militants" [237]. This socio-political turmoil was reflected in the episode of the assault on Mamoni narrated by the author.

As Mamoni goes to the Pokoria River to wash clothes, the armed forces kidnap her and commit sexual assault. Thereafter, she "faints unconsciously and frequently suffered from severe mental trauma" whenever she happens to "see the armed men jeeps and hear sounds of shoes" [24]. This type of sexual assault left the victims with mental trauma. Karthiki Keshkamat, the psychologist, says that "all types of sexual abuse can lead to mental health issues" among women [19]. Mamoni undergoes undepictable mental stress due to the presence of the man (who sexually assaulted her) in the same vicinity where the victim lives. Furthermore, like many rape survivors, they may suffer from anxiety and depression and frequently experience symptoms of Post Traumatic Stress Disorder (PTSD)" [25]. Psychologists diagnose these as the symptoms of Post-Traumatic Stress Disorder (PTSD). This problem sometimes affects physical growth in children, "but emotional and psychological symptoms have long-lasting effects" [26]. She used to recollect those painful scenes when she was about to see the military men around her place. Though this happened two years ago, it continues to haunt her life. "This horror affected people physically, and their name or the sound of their shoes was enough to go crazy" [22]. The psychological trauma of Mamoni is undepictable.

"Children who have experienced sexual abuse show behavioural and emotional changes"; post-traumatic stress disorder is another consequence of sexual abuse in children [22]. These haunting traumatic events extreme Mamoni's physical reactions and impact her mental state. The report of Restless Frontier reveals that "they [the armed forces of the Government] conducted raids, went house to house for the militants. Most of the instances of loot, plunder, destruction, and molestation of women that came to light took place" in this era [17]. The psychological condition of Mamoni is depicted heartrendingly through the narrator of the story, Pablo. To quote to Pablo "she wouldn't stop, she kept screaming like a lunatic until she fainted" [24]. The author created a character of this kind out of his own knowledge.

Mridul

In another context, the author depicts behavioural abnormality, which is contagious in the backdrop of the socio-political crisis. Oholya-jethai is an elderly unmarried woman who is indirectly poorly affected by the upsurge of the Assam insurgency and the counter-insurgency repression by the Government. The unemployment, irrational education system, lack of technology, and land issues between natives and immigrants made the native people migrate to nearby regions. This again leads to severe problems such as "endemic poverty, malnutrition, disability, economic/social decline and psycho-social illness" and so on [30]. She undergoes anxiety and depression as her loved one cancels the wedding after their betrothal due to her family's poverty. She cannot accept this bitter truth as he immensely loved the doctor. This drives her into mental trauma.

The abnormality in Oholya-jethai due to socio-political turmoil, causing immense trouble, affects the psyche of Mridul, a young boy, cousin to the narrator, Pablo. His father died of some health problem. She shows her anger towards Mridul and shouts at them for wasting time when he plays

carroms and music with his guitar. She always scolds without any reason. As he is the only child in the family feels very lonely in the house, and her words increase his sorrow. Oholya-jethai's rude behaviour and aggressive nature "irritates him and makes him cry and blow out in front of Pablo"; therefore, the young, parentless child, Mridul, suffers from mental trauma [24]. The psychologist, Mohammad Freh, opines that "the impact of wars and insurgency would be severe on children who slowly develop the symptoms of post-traumatic stress disorder and lower psycho-social functioning levels during their lifetime" 31]. In this context, the children Oholya-jethai and Mridul reflected victims of the existing tumultuous social and political ambience in Assam. According to Freh, the conflicts through which undepictable brutality happens may fundamentally affect children. These unpleasant occurrences remain everlastingly in their oblivious personalities, exposing them to mental ailment [29]. Through the portrayal of Mridul, the creator passes on his concern that the generations coming would be victimized by the continuous conflict between the local Assamese supported by the ULFA and the Government, which continually neglects to solve the issue.

CONCLUSION

Aruni Kashyap, who wishes for Assam to be one of India's states, scathingly criticizes the government's laxity when counter-agitation armed personnel commit crimes against native Assamese. The author naturally shows the people's susceptibility to various psychological disorders due to the existing socio-political turmoil through the characterization of Mamoni and Mridul, especially child children. Several news reports, real stories published in magazines, journals, and fact-finding reports by some people's forums testify to this phenomenon. The author believes that the children in Assam were affected with psychological trauma due to the violent agitation by the ULFA and the state violence unleashed through the government's armed forces to suppress the former. The author depicted this phenomenon through the characterization of Mamoni and Mridul heartrendingly. Although the characters are fictional, the characterization has historical authenticity asserted by necessary recorded evidence. This novel objectively and creatively reflects the violent activities of the ULFA and the counter-violent agitation of the Government's armed forces. The names of the villages in which the violence unleashed by both sides are fictional. Still, the occurrence of violence in several villages in the ULFA-dominated regions is a fact. Death, injury, sexual assault, famine, sickness, and disability are among war's most deadly physical consequences, while post-traumatic stress disorder (PTSD), despair, and anxiety are among the most dangerous mental consequences. People and communities suffer emotional suffering as a result of the fear and misery caused by war's savagery, which disrupts lives and shatters relationships and families. Hence, it is asserted that the novel, The House with a Thousand Stories, reflected objectively and creatively (with the confluence of fact and fiction) the then-contemporary socio-political turmoil in Assamese society that caused mental trauma among the people of ethnically and economically weaker sections in Assam society and its impact was more severe on the psyche of children.

The impact or learning from this paper, especially for health leadership and management, includes:

1. Understanding Mental Health in Conflict Zones: The paper sheds light on the psychological consequences of political turmoil and armed conflicts on individuals and communities, emphasizing the mental health challenges faced by people in Assam. Health leaders and managers can learn about the importance of addressing mental health issues in conflict zones and developing strategies to provide support.

2. Recognition of Socio-Political Determinants of Health: The draft paper highlights how socio-political factors can significantly impact the mental health of populations. Health professionals and leaders can gain insights into the broader determinants of health beyond traditional medical issues, enabling them to develop more comprehensive and effective public health strategies. 3. Importance of Trauma-Informed Care: Given the emphasis on PTSD and emotional suffering in the context of violence and conflict, health leaders may learn about the importance of trauma-informed care. This involves understanding the impact of trauma on individuals and communities and tailoring healthcare approaches to be sensitive and supportive. 4. Interdisciplinary Collaboration: The paper integrates elements of literature, history, and recorded evidence to convey the socio-political context. Health leadership professionals can learn about the value of interdisciplinary collaboration, recognizing that health issues often intersect with broader societal issues that require a holistic approach. 5. Advocacy for Vulnerable Populations: The focus on the impact of violence on ethnically and economically weaker sections of Assam society, especially children, could inspire health leaders to

advocate for vulnerable populations. This may involve promoting policies that address social determinants of health and ensure access to mental health services for those most affected. 6. Ethical Considerations in Healthcare: The criticism of the government's response to armed personnel committing crimes underscores the importance of ethical considerations in healthcare during times of conflict. Health leaders may reflect on the role of healthcare professionals in advocating for ethical practices and ensuring the well-being of the population.

ALTERNATIVE PERSPECTIVES AND LIMITATIONS

a) Alternative Perspective: Literary works are often open to interpretation, and different readers may perceive characters and themes differently. The interpretation of Mamoni and Mridul's characters and the connection to socio-political turmoil may vary among readers.

b) Limitation: The paper relies heavily on the interpretation of specific characters and events in a novel. Literature is subjective, and different readers may derive various meanings from the same text.

c) Alternative Perspective: Focusing on one novel may lead to a narrow understanding of the broader socio-political context in Assam. The experiences of characters in a work of fiction might not accurately represent the diversity of real-life experiences during conflicts.

d) Limitation: The research may be limited by its exclusive reliance on one novel, potentially overlooking the complexity and heterogeneity of the impact of socio-political turmoil on children in Assam.

e) Alternative Perspective: Aruni Kashyap's personal views and biases may influence the narrative, impacting the portrayal of characters and events. The novel's political inclination might not objectively represent historical incidents or the perspectives of all affected parties.

f) Limitation: The paper should acknowledge the potential bias in the novel and recognize that it may not provide a completely objective or comprehensive view of the socio-political situation in Assam.

g) Alternative Perspective: While the paper draws on psychological concepts and historical facts, the lack of empirical studies or direct interviews with affected children might limit the depth of understanding regarding their psychological issues.

h) Limitation: The research might benefit from incorporating more empirical evidence, such as interviews, surveys, or psychological assessments, to enhance the validity and reliability of its findings.

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RESEARCH ARTICLE

BUILDING HEALTHCARE BRAND: ROLE OF SERVICE, IMAGE, AND TRUST

Pradeep Kumar[1], Shashank Mittal[2], Shubham Kumar[3]*

1. BIMTECH - Birla Institute of Management Technology, Greater Noida, India
2. Jindal Global University, Jindal Global Business School, Sonipat, Haryana, India
3. University of Minnesota, Minneapolis, United States of America

Correspondence: Fpm12002.shashank@iimraipur.ac.in; shashankmittal1107@gmail.com

ABSTRACT

OBJECTIVE:

Healthcare branding is a recent concept, and its theoretical modeling is still somewhat inadequate. This paper examines how perceived service quality affects healthcare brand performance, brand image, and behavioral intention.

METHODS:

The present study uses survey responses from 678 patients who have taken treatment in multi-specialty medical institutes. Standard scales were used from the literature to measure the variables used. The conceptual model was validated using structural equation modeling using AMOS. SPSS was used to determine the validity and reliability of the questionnaire.

RESULTS:

The theoretical model has a relatively high and significant coefficient path for each of the hypotheses. The R2 value for satisfaction was 0.70 or 70 percent. The R2 value for the trust was 0.78. For Brand performance, Brand image and behavioral intentions were 81, 82.5, and 74%, respectively. Overall, the scores suggest an acceptable level of measure score and predictive ability of the relevant constructs. The results disclose the dimensions of service quality in the circumstances of healthcare. The patients place relatively more importance on healthcare service quality than any other attributes of healthcare institutions. Service quality has a high beta value of 0.98 and p p-value of 0.000.

CONCLUSION:

The study makes an innovative theoretical contribution by establishing a relationship between experience-centric healthcare brand performance and brand image. Patient satisfaction and trust were demonstrated to mediate the relationship between perceived service quality, brand performance, brand image, and behavioral intention in a healthcare context. The study established the novel finding that trust and satisfaction play a significant role in service quality, brand performance, and brand image of healthcare institutions. This study also shows that brand performance has a positive and significant direct effect on brand performance. This shows the dependency of brand image on brand performance in the healthcare institution context.

KEYWORDS

healthcare, healthcare branding, healthcare service quality, healthcare institution brand image, and brand performance.

INTRODUCTION

In the competitive field of healthcare branding, healthcare institutions need to have the latest marketing tools that aims to engage, develop trust, and have repeat patients. According to Kumar et al. (2023) [9], branding involves developing emotional and rational expectations of consumers that differentiate a brand from its competitors. As the healthcare service sector continues to grow and becomes increasingly globalized, increased competition and reduced government funds place more significant pressure on institutions to market their courses and programs.

Healthcare branding is the process of creating a unique identity for a healthcare organization or product that differentiates it from its competitors and makes it easily recognizable to consumers [2]. It involves developing a brand strategy, including messaging, visual identity, and other brand elements, that effectively communicates the organization's values and mission [6]. Branding is an essential aspect of marketing in the healthcare industry because it can influence how consumers perceive a healthcare organization or product. A strong brand can help build trust and loyalty among patients and other stakeholders, and it can also help attract new patients and retain existing ones [8].

The primary research questions explored in the study are:

1. What are the antecedents of healthcare branding that play significant roles in building a healthcare brand?
2. What are the psychological mechanisms through which antecedents create healthcare branding?

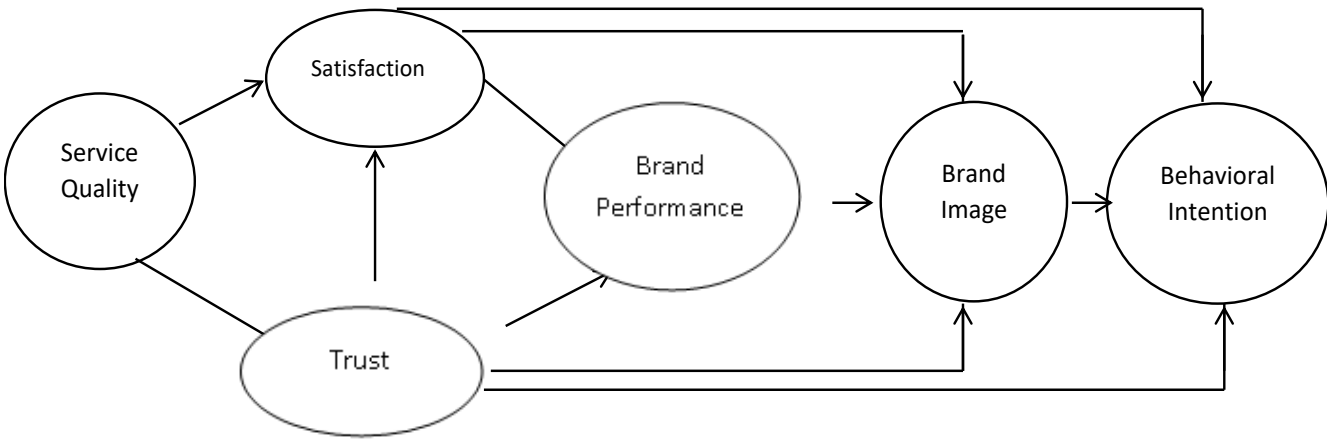
By creating a strong brand, healthcare organizations can build trust and credibility with patients and other stakeholders, which can lead to increased patient loyalty, patient referrals, and overall growth of the organization [13]. In addition, healthcare branding can help to improve patient experiences by creating a consistent and cohesive experience across all touchpoints, from the website to the clinical setting [24]. This can help patients to feel more comfortable and confident in their care, leading to improved patient satisfaction and outcomes.

Limited research on the impact of branding on patient outcomes and almost a lack of research on branding in specific healthcare contexts [7,19]. While there is some research on the impact of branding on patient perceptions and behaviors, there is limited research on the impact of branding on patient outcomes, such as health outcomes, patient satisfaction, and patient loyalty [19]. While there is a growing body of literature on healthcare branding, much of it is general and not specific to healthcare contexts, such as hospitals, primary care clinics, or specialty practices [20]. According to Keller and McWilliams, in the competitive healthcare service environment, Branding involves developing emotional and rational expectations of healthcare consumers that differentiate a brand from its competitors [4]. As the healthcare service sector continues to grow and becomes increasingly globalized, increased competition and changes in technologies place more significant pressure on healthcare institutions to market their services. Given the increasing importance of healthcare branding and the limitations of current research, more research is needed to understand how branding can be tailored to specific healthcare contexts.

METHODS

RESEARCH MODEL AND HYPOTHESIS:

FIGURE1: PROPOSED RESEARCH MODEL



This study aims to find out how the service quality of a medical institute affects the actual brand image, brand performance, and behavioral intention by mediating the effects of satisfaction, and trust, and moderating the role of gender Service quality (SQ) is defined as the consumer's judgment about a product's overall excellence or superiority. Service quality refers to the degree of excellence of the service provided by an organization [24, 26].

Hypothesis 1: Perceived Service quality of healthcare institution has a positive relationship with satisfaction.

Hypothesis 2: Perceived Service quality of healthcare institution has a positive relationship with trust.

Brand trust is a security and a sense of well-being of the client that is held by the customer when an interaction happens with brand attributes [5,23]. These attributes are based on promises and brand commitment in perspective on the customer concerning dependability, awareness of other's expectations, and advantages toward the welfare of the community. Brand image is the present perspective of the customers about a brand [2,4].

Hypothesis 3: Satisfaction has a positive relationship with trust.

Hypothesis 4: Satisfaction has a positive relationship with Brand performance.

Hypothesis 5: Trust has a positive relationship with brand performance.

As indicated by Zeithaml in 1996 [27], behavioral intention predicts customer's intentions regarding loyalty to an organization [20,22]. The better-perceived brand experience increases market demand. According to Xu in 2017 a positive correlation has been detected between image and intention in the tourism and hospitality industries [21,24,25].

Hypothesis 6: Brand performance has a positive relationship with brand image.

Hypothesis 7: Trust has a positive relationship with Brand Image.

Hypothesis 8: Satisfaction has a positive relationship with Brand Image.

The brand of a healthcare institution encompasses the unique characteristics that distinguish it from others, as noted by Nguyen (2016) [1,5,8,22]. A healthcare institution's brand reflects its ability to meet patient needs, instills trust in its capacity to provide the required services, and helps potential patients make informed decisions [4,7,19]. Overall, the concepts of satisfaction, trust, and brand play significant roles in the healthcare industry [2,3,6,23].

Hypothesis 9: Satisfaction has a positive relationship with Behavioral Intention.

Hypothesis 10: Brand image has a positive relationship with behavioral intention.

Hypothesis 11: Trust has a positive relationship with Behavioral Intention.

DATA COLLECTION AND MEASURES:

Considering the focal point of the study, data was collected from three healthcare institutes in northern India who had focus on multi-specialty healthcare services. These healthcare institutes have been at least operational for the last 10 years and have a regular inflow of patients. These healthcare institutions have all the facilities like ICU, IPD, and OPD, expert consultants, and oxygen beds. The healthcare institution selection approach was based on convenience sampling. Researchers were able to get access to the contact records of patients from the hospital records and contacted them to participate in the survey. Within the healthcare institute, we followed random sampling to collect responses. Indicating a sampling rate of more than 34.6 percent, which was way higher than the acceptable level of satisfactory rate (for example [9,10,12,15,17]). Participants were emphatically assured that the responses would be kept confidential. These methods are consistent with the procedures prescribed by Podsakoff et al. (2003) to reduce common method bias [23,16].

The researchers approached the case organization (Rajendra Institute of Medical Sciences, Ranchi, India) for ethical clearance. The ethical committee approved the research data collection in the month of December 2023 and the first author received the research support (on-duty leave, research travel permission to the Ranchi City, India on 13th-14th December 2023).

To test the hypotheses, data were collected from different sample groups (Rajendra Institute of Medical Sciences, Ranchi, India) including recently discharged and old patients at different time frames to avoid common method biases. First, independent variables were measured, and then the dependent variable was measured after a month. Measuring dependent and independent variables at two-time frames reduces the common method bias. A total of 678 participants were included in the study.

A well-structured questionnaire was the tool used for data collection, with two demographic questions. A five-point Likert-type scale was used to measure the responses for all the measures used in the study.

Service quality: Service quality (SQ) is defined as the consumer's judgment about a product's overall excellence or superiority. Service Quality is an overall evaluation of tangible and intangible service attributes from a consumer's standpoint, service performance is the control of tangible and intangible service attributes to connect to corporate and marketing strategies from an organization's standpoint. The scale includes 17 questions to identify the service quality of the healthcare institution [3,6,12,17].

Brand trust: Brand trust is a security and a sense of well-being of the client that is held by the customer when an interaction happens with brand attributes. These attributes are based on promises and brand commitment in perspective on the customer concerning dependability, awareness of other's expectations, and advantages toward the welfare of the community as a whole.

The scale uses nine questions regarding the trust level of healthcare institutes in the minds of patients [22,25].

Brand image: As indicated by Yuan et al. 2016 [32]and according to Sultan and Wong 2010 [29] the brand image may be viewed as the framework for establishing the needs of consumers and giving an overall impression of the brand. Brand image is the present perspective of the customers about a brand. As indicated by Yuan et al. 2016 [32] Perceived image of a brand refers to customers' beliefs and subjective insights of brand associations. Thus, a brand's image can consist of tangible and intangible cues, which may include cognitive and emotive evaluations and affective responses. The success of a brand image strategy is dependent on the suitability of the brand in local and international markets. It gives an overall impression of the brand. The scale uses five questions regarding the brand image [20]

Brand performance: As indicated by Akhoondnejad 2018 [1] the brand performance measure is defined as the brand's relative success in the marketplace, which is often driven by cognitive attitudes. The scale uses 7 questions regarding brand performance [22].

Behavioral intention: Prospective patient's behavioral responses that signal whether the patient remains or defects from the healthcare institution. The better-perceived brand experience increases market demand. According to Xu et al. in 2017 [31]a positive correlation has been detected between image and intention in the tourism and hospitality industries. The scale uses five questions regarding the behavioral intentions of patients towards the Healthcare institutions. [4,22].

Satisfaction: According to Sultan and Wong in 2014 [29], in the circumstance of healthcare trust has been defined as a cognitive understanding and a thorough belief that the future service performance and subsequent satisfaction will be identical. The scale uses 6 questions to identify Satisfaction, [19, 20, 22].

To achieve the purpose of this study and to estimate the relationships in the model, structural equation modeling with AMOS is used. IBM's SPSS software was used to determine the validity of the questionnaire. SPSS was used to measure the descriptive statistics of the sample. Cronbach's alpha was adopted to test reliability.

RESULTS

Interpretation: The study relies on a sample size in which the number of female respondents is 378 and the number of male respondents is 300. Table 1 indicates that 56.8% of the respondents were females and 44.2% of the respondents were males.

TABLE 1-GENDER CHARACTERISTICS

	Frequency	Percent
Female	378	56.8
Male	300	44.2
	678	100

TABLE 2-AGE OF RESPONDENTS

	Frequency	Percent
Less than 30	111	16.4
30-40	163	24
40-50	160	23.5
More than 50	244	36
	678	100

Interpretation: - From the 678 respondents, Table 2 gives a clear idea of the distribution of the ages of the respondents. The range of ages of the sample chosen was less than 30 to more than 50. 16.4% of the respondents were less than age 30, 24% were of age 30-40, 23.5% were of age 40-50 and the rest were more than age 50.

Convergent validity test results: The Confirmatory Factor Analysis (CFA) test results show that the critical ratio values were greater than 1.96 for each item at the p less than 0.05 level, suggesting strong convergent validity. The square root of the total variance was used to compute the average variance extracted (AVE) for all study constructs. Results show that AVE was greater than 0.5 for each of the study constructs, suggesting a strong convergent validity for each construct. These two results confirm that the constructs have convergent validity. (See table 3 & 4

TABLE 3 – FACTOR LOADING AND RELIABILITY TEST

Questions	Constructs	Factor Loadings	Cronbach's alpha
SQ1	Service Quality	0.752	
SQ2	Service Quality	0.739	
SQ3	Service Quality	0.812	
SQ4	Service Quality	0.812	
SQ5	Service Quality	0.773	
SQ6	Service Quality	0.755	
SQ7	Service Quality	0.784	
SQ8	Service Quality	0.743	
SQ9	Service Quality	0.7	0.932
SQ10	Service Quality	0.704	
SQ11	Service Quality	0.721	
SQ12	Service Quality	0.691	
SQ13	Service Quality	0.746	
SQ14	Service Quality	0.712	
SQ15	Service Quality	0.624	
SQ16	Service Quality	0.86	
SQ17	Service Quality	0.873	
Sati6	Satisfaction	0.763	0.917
Sati5	Satisfaction	0.852	

Sati4	Satisfaction	0.79	
Sati3	Satisfaction	0.815	
Sati2	Satisfaction	0.81	
Sati1	Satisfaction	0.812	
Tru1	Trust	0.867	
Tru2	Trust	0.79	
Tru3	Trust	0.831	
Tru4	Trust	0.808	
Tru5	Trust	0.824	0.938
Tru6	Trust	0.838	
Tru7	Trust	0.809	
Tru8	Trust	0.688	
Tru9	Trust	0.728	
Per7	Brand Performance	0.782	
Per6	Brand Performance	0.813	
Per5	Brand Performance	0.697	
Per4	Brand Performance	0.817	0.92
Per3	Brand Performance	0.805	
Per2	Brand Performance	0.799	
Per1	Brand Performance	0.833	
BrImg1	Brand Image	0.798	
BrImg2	Brand Image	0.745	
BrImg3	Brand Image	0.784	0.892
BrImg4	Brand Image	0.736	
BrImg5	Brand Image	0.767	
BrImg6	Brand Image	0.734	
Bhin5	Behavioral Intention	0.83	
Bhin4	Behavioral Intention	0.87	
Bhin3	Behavioral Intention	0.853	0.915
Bhin2	Behavioral Intention	0.746	
Bhin1	Behavioral Intention	0.807	
CMIN/DF= 1.667; GFI= .917; CFI= .909; IFI= .910; TLI= .903; RMSEA=0.057			

Interpretation: - Table 3 for reliability analysis uses the indication of Cronbach's Alpha for the variables of the study. The first variable is Service Quality, and the reliability was 0.932 on Cronbach's Alpha Assessment. The second variable is Satisfaction, and the reliability test indicated a value of 0.917. The third variable is Trust, and the reliability test value is 0.938. The fourth variable is Brand Image, and the reliability test indicated a value of 0.892. The fifth variable is Brand Performance, and the reliability test indicated a value of 0.920 and the sixth variable is Behavioral Intention, and the reliability test value is 0.915, which indicates that the questions are accepted. These variables show that the reliability analysis exceeds 0.7 and these variables are valid and reliable for further statistical analysis.

Results of the measurement and structural model analyses: The results of the measurement model demonstrated an acceptable fit, as did the structural model. The fit indices include RMSEA (0.057). The incremental fit measures, including TLI (0.909), NFI (0.801), and CFI (0.909), were all close to 1.0. The values of these fit indices were all acceptable. Thus, these measures suggest that the model fits reasonably within the dataset.

Discriminant validity test results: The Discriminant validity was supported as the v2 difference for each pair was significant which meant that p less than 0.01. Second, a comparison table was developed for AVE and squared correlation estimates. The results show that AVE estimates are greater than squared correlation estimates. Thus, the results show that discriminant validity exists for each construct.

TABLE 4- DISCRIMINATE ANALYSIS

	CR	AVE	Brand Image	Service Quality	Satisfaction	Trust	Brand Performance	Behavioral Intention
Brand Image	0.892	0.579	**0.761**					
Service Quality	0.931	0.51	0.501	**0.667**				
Satisfaction	0.918	0.652	0.412	0.511	**0.807**			
Trust	0.941	0.64	0.527	0.51	0.616	**0.8**		
Brand Performance	0.922	0.629	0.485	0.579	0.21	0.643	**0.793**	
Behavioral Intention	0.912	0.676	0.506	0.541	0.678	0.674	0.487	**0.822**

TABLE 5 - HYPOTHESIS TESTING

				Beta coefficient	P test	Result
Satisfaction	<---	Service Quality	H1	0.98	0.000	Accepted
Trust	<---	Service Quality	H2	0.497	0.000	Accepted
Trust	<---	Satisfaction	H3	0.505	0.000	Accepted
Brand Performance	<---	Trust	H4	0.568	0.000	Accepted
Brand Performance	<---	Satisfaction	H5	0.358	0.000	Accepted
Brand Image	<---	Brand Performance	H6	0.583	0.000	Accepted
Brand Image	<---	Trust	H7	0.198	0.003	Accepted
Brand Image	<---	Satisfaction	H8	0.163	0.008	Accepted
Behavior Intention	<---	Brand Image	H9	0.415	0.000	Accepted
Behavior Intention	<---	Trust	H10	0.297	0.000	Accepted
Behavior Intention	<---	Satisfaction	H11	0.329	0.000	Accepted

CMIN/DF= 4.209; GFI= 0.975; CFI= 0.992; IFI= 0.992; TLI=0.969; RMSEA=0.025

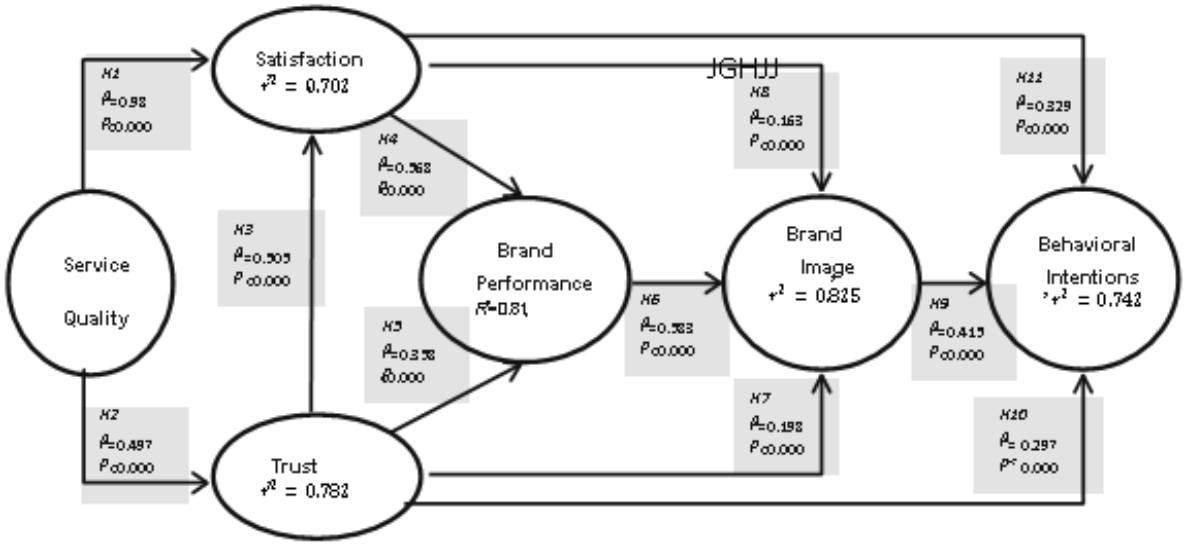
Interpretation: As the hypothesis states that the Service quality of healthcare institution has a positive relationship with satisfaction with the beta value for service quality with satisfaction being 0.98 and the p-value being less than 0.05 we accept the hypothesis. Similarly, Hypothesis 2 states that the Service quality of healthcare institution has a positive relationship with trust with a beta value of 0.49 and a p-value is less than 0.05. So, Hypothesis 2 is accepted. Also, we can say that the beta value of Service Quality to Satisfaction is higher than Service Quality to trust so we can say that Service Quality to satisfaction is more correlated than service quality to trust. Hypothesis 3 states that Satisfaction has a positive relationship with trust and the beta value is 0.505 and the p-value is less than 0.05. So, the hypothesis is accepted. According to Hypothesis 4. satisfaction has a positive relationship with Brand performance and the beta value is 0.358 and the p-value is less than 0.05 so the hypothesis is accepted. Similarly, hypothesis 5 is also accepted with a beta value of 0.358 and p p-value less than 0.05. As the sixth hypothesis, Brand performance has a positive relationship with brand image and the beta value is 0.583 with p value less than 0.05. So the hypothesis is accepted. Similarly, Hypothesis 7 is also accepted with a beta value is 0.198 and p-value less than 0.05. Hypothesis 8 states that Satisfaction has a positive relationship with Brand Image and the beta value is 0.163 and p-value is less than 0.05 so the hypothesis is accepted.

The results disclose the dimensions of service quality in the circumstances of healthcare. The patients place relatively more importance on healthcare service quality than any other attributes of healthcare institutions. Service qualities have a high beta value of 0.98 and a p-value of 0.000. Also, we can say that the beta value of Brand performance to Brand image is higher than the hypothesis H7 and H8 so we can say that Brand performance to Brand image is more correlated than trust and satisfaction. As the ninth hypothesis Satisfaction has a positive relationship with Behavioral Intention and the beta value is 0.415 with p value less than 0.05. So, the hypothesis is accepted. Similarly, hypothesis 10 is also accepted with a beta value is 0.297 and a p value less than 0.05. Hypothesis 11 states that Trust has a positive relationship with Behavioral Intention and the beta value is 0.329 and p value is less than 0.05 so the hypothesis is accepted. Also, we can say that the beta value of Brand image to behavioral intention is higher than the hypothesis H10 and H11 so we can say that Brand image to behavioral intention is more correlated than trust and satisfaction.

The theoretical model as referred to in Figure 1 has a relatively high and significant coefficient path for each of the hypotheses. The R2 values for each of the constructs are high and significant, which indicates the predictive validity. The R2 value for satisfaction was 0.70 or 70 percent. The R2 value for the trust was 0.78 or 78 percent. Similarly for Brand performance, Brand image and behavioral intentions were 81, 82.5, and 74%, respectively. Overall, the scores suggest an acceptable level of measure score and predictive ability of the relevant constructs.

The results of the measurement model demonstrated an acceptable fit, as did the structural model. The fit indices include RMSEA (0.025). The incremental fit measures, including TLI (0.969), GFI (0.975), and CFI (0.992), were all close to 1.0. The values of these fit indices were all acceptable. Thus, these measures suggest that the model fits reasonably within the dataset.

FIGURE 1: PATH MODEL OF THE PROPOSED RESEARCH MODEL



DISCUSSION

The service quality mainly includes the doctors' ability to deliver interactive, informative, and human services [7,13]. Also, the administrative service quality, which includes the ability of support staff to answer patients' inquiries efficiently and support patients during their course of study [29]. Brands play a significant role in influencing the perception of healthcare institutions' prospective and current patients to develop a strong conative attitude toward a continued and loyal relationship [3].

This study also shows that brand performance has a positive and significant direct effect on brand performance. This shows the dependency of brand image on brand performance in the healthcare institution context. The study also shows that satisfaction, trust, and brand performance have partial mediating effects on service quality - brand image relationship. Hence proved that the relationship between service quality and behavioral intention is mediated by satisfaction, trust, brand performance, and brand image.

This study examined how perceived service quality affects Healthcare institution brand performance, Healthcare institution brand image, and behavioral intention. A recent study conducted by Merrilees in 2017 [12] mentioned the experience-centric branding approach and claimed that most consumers do not only buy services, but they also buy services and experiences together [10, 17]. As indicated by Nguyen in 2016 [17] the dimensions of brand performance are perceived service quality and marketing mix constructs but, in this study, the dimensions of brand performance are relative and experience-centric measures and validation of those measures. Brand performance can be defined as the achievement of a brand in a stipulated market that prescribes market share, switching and brand's overall perception The brand performance measure has been also considered as an index of penetration, purchase frequency and market share. The brand performance is a partial measure of a brand's marketplace achievement.

The study identified the importance of service quality in the healthcare institutions' context so make service quality a directory or index so the Healthcare institutions can gain further insights into service quality [5]. Also classify service quality in terms of medical, administrative, and facility so it's easier to understand the strengths and weakness of each attribute and assign necessary resources to improve overall perceived quality [23]. For the sustainable growth of healthcare institutions, it's mandatory to increase and gain patient trust and satisfaction because these two constructs have substantial mediating effects on Brand performance, Brand image, and behavioral intentions [11,17].

PRACTICAL IMPLICATIONS

Healthcare institutions need to develop their unique dimensions and measures when patients have many choices with cluttered information and limited differentiation, so brands play a significant role in influencing the perception of Healthcare institution's prospective and current patients and develop a strong conative attitude for a continued and loyal relationship [6, 21].

Brand image can comprise of tangible and intangible cues, which may incorporate intellectual and emotive assessments and emotional reactions. Perceived image towards a brand refers to customers' beliefs and subjective insights of brand associations. Marketing communications are well understood to have direct and indirect relationships with brand image. Increase the visibility of brand performance and brand image to patients of healthcare institutions with all kinds of supporting social and economic indicators. Use social media and various campaigns to promote brand performance. So, it will progress brand positioning and brand equity [25]. This kind of measure will effectively engage loyal patients and other stakeholders with the brand. Also, it is possible to market the achievements, rankings, and accreditations of Healthcare institutions this will increase the brand value and brand recognition.

The study identified the importance of service quality in the healthcare institution context so make service quality a directory or index so the healthcare institutions can gain further insights into service quality. Also classify service quality in terms of patient care, administration, and facility so it's easier to understand the strengths and weakness of each attribute and assign necessary resources to improve overall perceived quality. To improve satisfaction and trust in the minds of patients it's important to invest in service quality to maintain healthcare institution–patient relationships which ultimately result in Brand performance. For the sustainable growth of healthcare institutions, it's mandatory to increase and gain patient trust and

satisfaction because these two constructs have substantial mediating effects on Brand performance, Brand image, and behavioral intentions.

Also, through this study, it's possible to understand the satisfaction of patients towards the institute and the trust of patients towards the brand. Brand trust is a security and a sense of well-being of the patient that is held by the customer when an interaction happens with brand attributes. These attributes are based on promises and brand commitment in perspective on the patient concerning dependability, awareness of other's expectations, and advantages toward the welfare of the community as a whole.

LIMITATIONS AND CONCLUSIONS

The study has a few limitations that need to be considered. Firstly, the samples were only collected from three healthcare institutions, which may limit the generalizability of the results. Additionally, the study obtained a low response rate, which may have resulted in non-response bias, leading to an impact on the estimation of parameters [16]. Therefore, future research should exercise caution when extrapolating the model across different healthcare institutions, and geographic or cultural contexts, considering factors such as gender, courses of study, study mode, study level, and nationality, which could potentially moderate the findings.

The primary objective of this study was to explore how service quality influences brand performance, brand image, and patient behavioral intentions in a healthcare institution setting. The results revealed that the relationship between service quality and behavioral intentions is mediated by patient satisfaction, patient trust, brand performance, and brand image [27,28]. This is a significant theoretical contribution of the study. Overall, while the study has a few limitations, it provides valuable insights into the relationship between service quality and brand performance, which can aid in the development of effective strategies for enhancing patient satisfaction and behavioral intentions in healthcare institutions.

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RESEARCH ARTICLE

THE EVOLVING ROLE OF AGED CARE MANAGERS IN AUSTRALIA: A CONTENT ANALYSIS OF AGED CARE MANAGER JOB DESCRIPTIONS

Stewart Alford[*1,2], *Sarah Barter*[2], *Al Qaf'an Ehmaidy*[2], *David Lim*[2]

1. School of Applied Psychology, Griffith University, Queensland, Australia
2. School of Health Sciences, Western Sydney University, New South Wales, Australia

Correspondence: s.alford@griffith.edu.au

ABSTRACT

Aged care management roles have evolved over the last decade from a focus on clinical skills to encompassing governance, business, facilities and service management skills. The role requirements have changed in response to the 2021 Royal Commission into Aged Care Quality and Safety findings [1], which were echoed in the 2022 NSW Parliamentary Committee report into health outcomes and access to health and hospital services in rural, regional and remote NSW [2]. Both reports identified workforce issues impacting on the management of aged care services and a need to improve governance, financial management, and service management. The reports indicated the breadth of the contemporary aged care manager role, the skill gap between traditional clinician-managers, and possibilities for appropriately trained non-clinical health services managers.

Recruiting and retaining skilled aged care managers is a critical issue facing a sector that was already experiencing significant 'churn' prior to the burnout associated with the COVID-19 pandemic [3]. This paper, informed by a market-orientated job skill valuation approach [4], reviewed 100 consecutive aged care management position descriptions advertised on public media between October and December 2020. Content analysis of each position description was conducted to identify key competencies, specific skills, experiences, and personal attributes required of managers of aged care services in Australia.

Our study identified five main themes relating to aged care manager competencies: (i) interpersonal communication, (ii) organisational and time management, (iii) quality improvement, (iv) business development, and (v) leadership and human resources. These competencies are congruent with the revised Australasian College of Health Service Management competency domains and action competencies [5].

KEYWORDS

Aged Care Managers, Aged Care Management, Competencies, Residential aged care

BACKGROUND

In 2018 the Commonwealth Government commissioned a Royal Commission into Aged Care Quality and Safety to review the quality of aged care services and whether those services are meeting the needs of the Australian community [1]. There was a plethora of failings noted by the Commissioners. In 2022, the NSW Parliamentary Committee Report into the health outcomes and access to health and hospital services in rural, regional and remote NSW [2] was released. It mirrored many of the same recommendations made by the Royal Commission into Aged Care Quality and Safety. These include a limited formally trained management workforce, and a tradition of appointing clinical staff to higher level management roles or increased service responsibilities due to necessity and/or for financial imperative rather than based on individual skills, qualifications, or capability [1-2]. It was suggested that appropriately skilled health management may have reduced the risk of harm.

An earlier report by the Productivity Commission noted the majority of residential aged care managers were appointed to or promoted from clinical roles, usually nursing [6]. This enables the nurse-manager to fulfil dual roles of managing the aged care service and providing clinical oversight, which complies with requirements for an onsite Registered Nurse and creates cost savings. Submissions to the Royal Commission into Aged Care Quality and Safety indicated that the practice of appointing inexperienced or inadequately credentialed clinical staff to managerial and/or clinical leadership roles resulted from the lack of available suitably qualified workforce, inadequate funding to support recruitment, urgency to fill management positions, and high staff turnover [1-2,6].

The poor financial performance of residential aged care facilities impacts recruitment and retention of skilled and qualified managers. In 2023, Stewart Brown [7] reported average operating results for residential aged care homes in all geographic sectors was an operating loss of $15.98 per bed day (up from $10.31 per bed day loss in 2021). A review of the top performing 25% aged care services found an association between effectiveness, efficiency and performance with good business management [7].

The skills, competence and personal attributes of a professional role are established to ensure that the practising and emerging workforce has the necessary capabilities to practise in the public interest, meet community need and maintain trust in the profession.

The 2023 Australian Government's Intergenerational Report found life expectancies will continue to rise while fertility rates continue to decline [8]. The ageing population in Australia is fuelling demand for safe, quality aged care services. Australian Government spending on aged care is projected to grow, fuelled by the need for residential care. Residents of aged care facilities are also increasingly having complex care needs such as cognitive impairment, palliative care [9] and relatively high nursing care needs [10].The required workforce skills and competencies will continue to evolve in response to new knowledge, advancement in technology, and in response to population and socio-demographic changes.

This study aims to understand the competencies, skills, experiences, and personal attributes required of an aged care manager in the current market and in the context of the Royal Commission into Aged Care Quality and Safety findings.

METHOD

Content analysis of job descriptions is an effective way to identify the market-orientated job skill valuation of workforce skills and competence [11-13]. It is also an important first step in understanding the contemporary professional learning and/or development needs of a workforce [11]. As job descriptions are in the public domain, job descriptions provide accessible data on the skills, competence and personal attributes required for specific roles. Similar approaches have been used to in studies surrounding health service manager employability skills [11] and in library and information science 12].

To coincide with the Royal Commission into Aged Care Quality and Safety (2018 – 2021), a search of consecutive 100 job descriptions of an aged care manager on public media (Seek.com, Indeed, Linkedin, and carecareers) between October to December 2020 was conducted. The sample size was informed by similar studies conducted on skill requirements [11-12]. Keywords deployed were: 'aged care manager', 'aged care facility manager', 'aged care general manager', and 'residential aged care manager'. Data was manually coded and tabulated by SB and reviewed by SA. Conceptual content analysis was

performed to examine the occurrence and frequency of specific skills, competencies and personal attributes. Relational content analysis was performed to identify key themes between the competencies and personal attributes.

The market-orientated job skill valuation framework [4] was adopted for this project to reflect Australia's neoliberalist approach to employment and productivity [14]. The framework assumed that each 'job position' is a composite of required skills, competencies, and attributes that an employer seeks, and thus willing to pay for.

Research rigour was ensured through peer debriefing with DL and persistent observation (credibility), audit trial and reflexive journal (dependability and confirmability).

RESULTS

Job descriptions were geographically spread throughout Australia. Most job descriptions 76% were from the eastern seaboard: NSW 35%, Qld 25% and Victoria 15%, ACT 1% respectively. A high proportion of positions 45% were advertised in regional or rural areas, demonstrating the ongoing demand for adequately skilled managers in these locations, despite the Australian Bureau of Statistics estimating that approximately only 28% of the total population live in either rural or remote areas [15].

Four separate role types were identified: General Manager/ Operations Manager, Residential Service/ Facility Manager, Assistant/ Deputy Facility Manager, Clinical Care Manager/ Care Manager.

FIGURE 1 - GEOGRAPHICAL SPREAD OF AGED CARE MANAGER JOB DESCRIPTIONS IN AUSTRALIA.

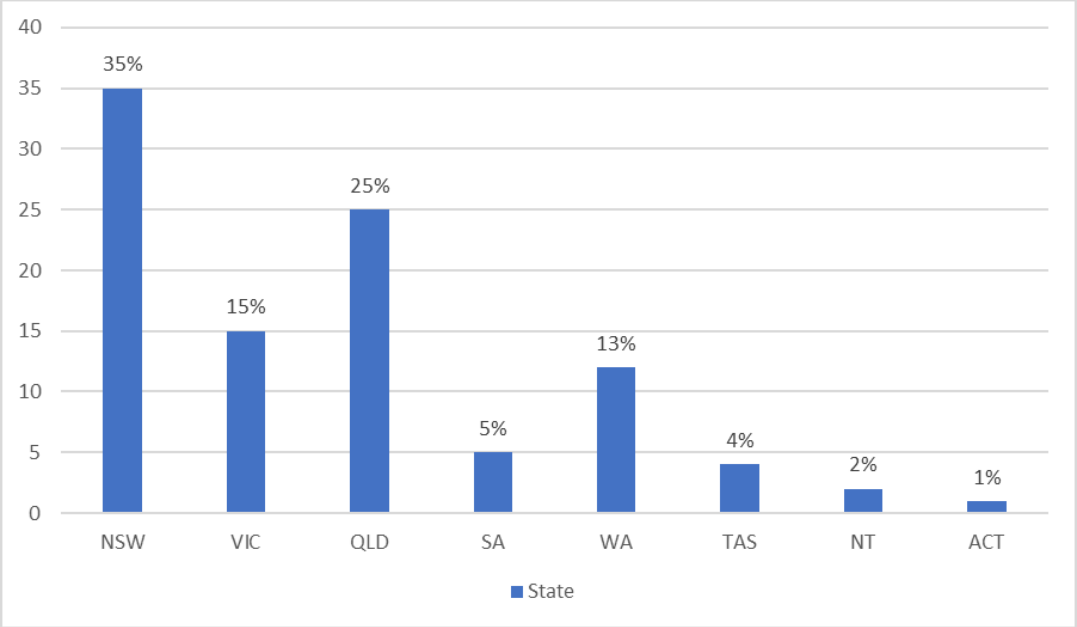
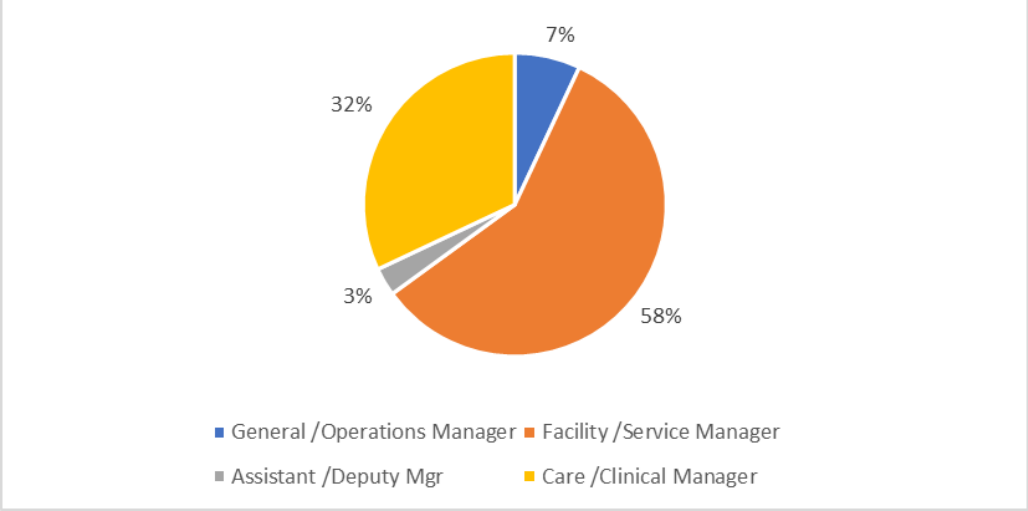


FIGURE 2 - ROLE DISTRIBUTION OF AGED CARE MANAGER JOB DESCRIPTIONS.



In addition, where data was available in the included job description, the following summary of findings were noted. The average size of a residential aged care facility (where bed numbers were listed) was 81 beds (range 45 - 162), the average salary of an aged care manager was $129,727 (range $100,000-$170,000) with a negligible difference in salary offered for urban vs rural/regional facilities (urban = $129,655; regional = $129,808). An average salary per bed was calculated as $1,601 per annum per bed or $4.38 per day per bed. It was noted many financial incentives (such as fringe benefits tax, company vehicle) were on offer in addition to salary, particularly for roles in a rural location and not-for-profit providers; for instance, financial assistance to relocate and additional weeks of paid holidays.

The most frequently identified professional skills for aged care managers were: leadership/ people management/ coaching 61%, followed by oral and written communication skills 47%, and knowledge of continuous improvement/ quality management/ safety and risk management 43%. This indicates a need for managers to be aware of the new regulatory requirements to oversee the safety and quality of care and ensure continuous improvement. The same professional may also be required to be financially literate and able to adeptly manage budgets. Sound business or financial acumen was identified in 32% of job descriptions, including ability to meet occupancy targets as indicated by specifications to have skills in business development and marketing.

FIGURE 3 - PROFESSIONAL SKILLS IDENTIFIED WITHIN AGED CARE MANAGER JOB DESCRIPTIONS.

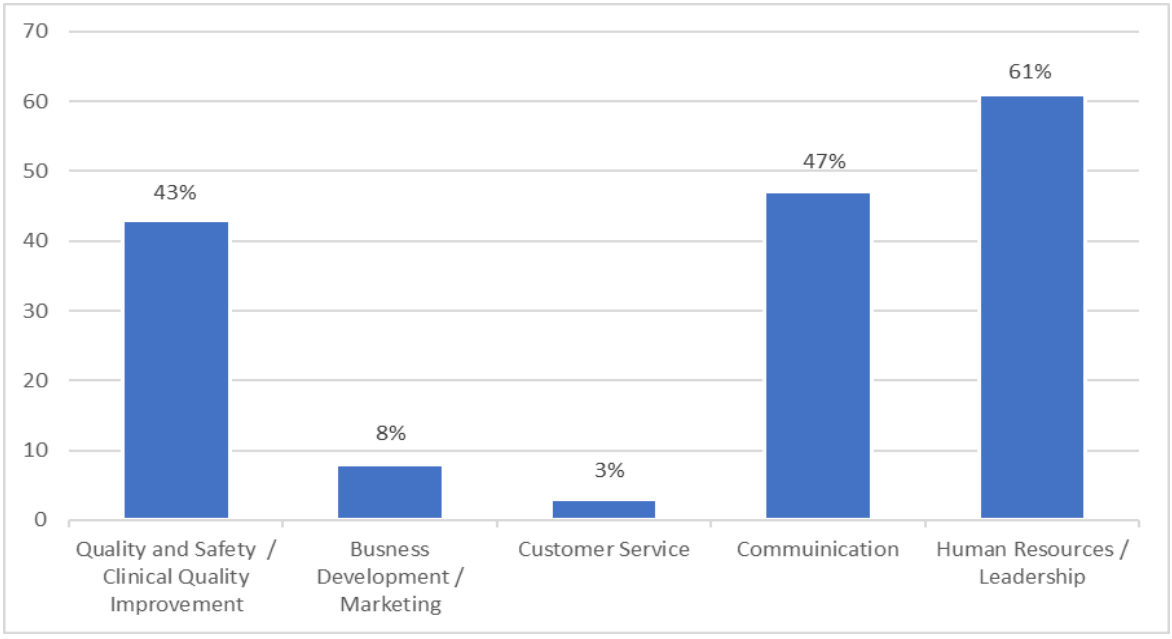
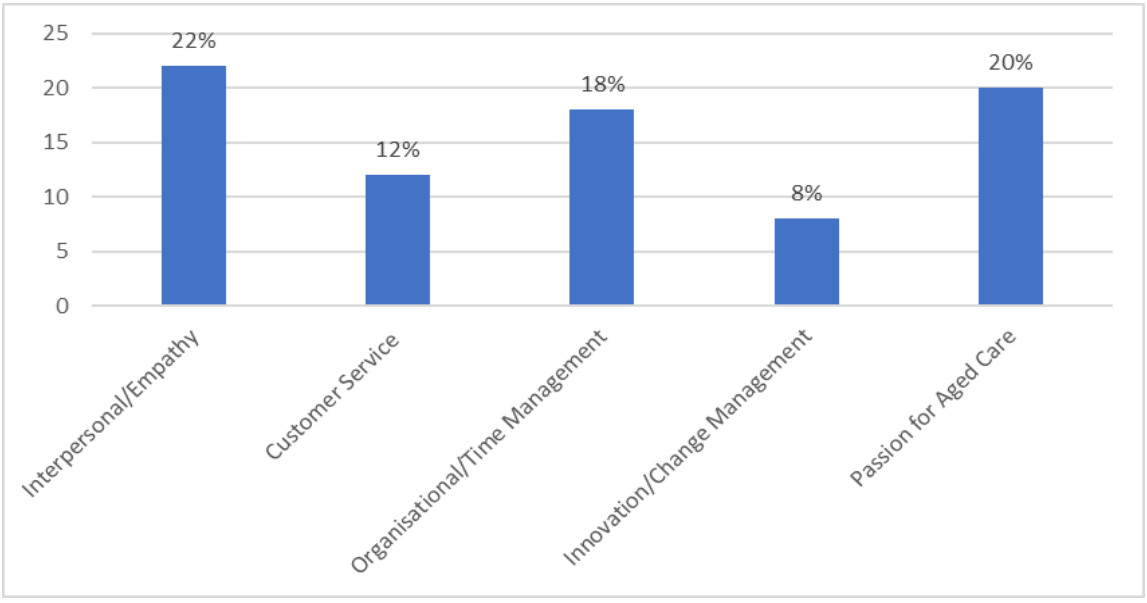


FIGURE 4 - PERSONAL SKILLS IDENTIFIED WITHIN AGED CARE MANAGER JOB DESCRIPTIONS.



Interpersonal skills, including empathy, was identified in 22% of job descriptions. In addition, one in five job descriptions highlighted the need for the applicant to demonstrate a "passion for aged care". Also of importance to some employers was organisation/time management skills, skills surrounding innovation, change management, and customer service.

MANDATORY REQUIREMENTS

Many job descriptions included the mandatory requirement for applicants to have a valid police check, working rights and influenza vaccination – due to the legislative requirements within the sector [16]. These are important safeguards but may potentially reduce the pool of available candidates in a high-demand profession that experiences significant staff turnover or inability to recruit to roles, particularly in rural and regional Australia. The need to ensure resident safety must be balanced with workforce availability.

QUALIFICATIONS AND EXPERIENCE

A high proportion of roles 69% viewed an AHPRA (Australian Health Practitioner Regulation Agency) a key qualification for these roles with 55% also highlighting a nursing qualification. Only 19% of roles viewed further/other tertiary qualifications as a key qualification to these roles. Aged care specific experience was required in 41% of advertised positions with 25% of roles requiring more than 3 years' experience. Only 7% of advertised roles generalised to "any" management experience (such as in healthcare). A small number of advertised positions 4% also requested experience in commissioning new services. More than half of all roles 55% required the applicant to have experience in ACFI (Aged Care Funding Instrument) and the Aged Care Quality Standards, demonstrating a need for a high-level technical understanding of aged care funding and regulatory requirements. In 2022, the Australian Government introduced a new funding model for residential aged care, the Australian National Aged Care Classification (AN-ACC), which aged care managers will now be required to understand [17].

FIGURE 5 – QUALIFICATIONS IDENTIFIED WITHIN AGED CARE MANAGER JOB DESCRIPTIONS.

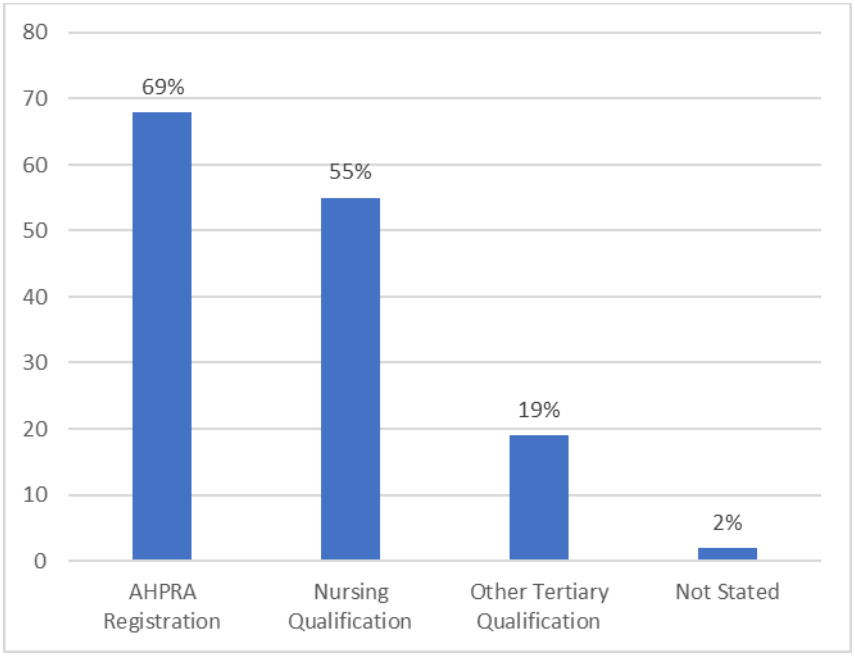
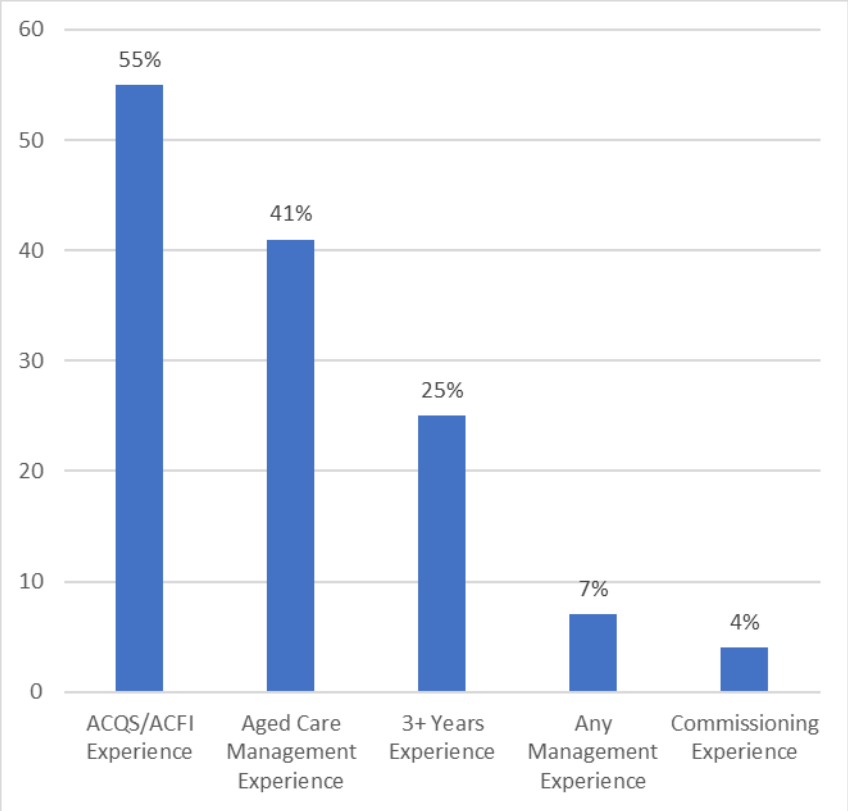


FIGURE 6 - EXPERIENCE IDENTIFIED WITHIN AGED CARE MANAGER JOB DESCRIPTIONS.



DISCUSSION

Aged care service provision in Australia is diverse with the AIHW reporting 2,671 residential aged care services, operated by 805 approved residential aged care providers as at 30 June 2022 [18]. As a result, aged care management structures are complex, with different types of managerial and mid-level managerial roles available across the sector. The review of advertised aged care manager positions demonstrates a preference for managers with clinical capacity and aged care experience over management expertise. This indicates perhaps a flawed industry assumption that an experienced clinician would make a successful manager or leader with little to no formal health management qualifications.

Our cross-sectional survey found that most aged care services are looking for candidates with comprehensives skillsets in a variety of areas including: clinical, financial, quality, change management, human resources, coaching and workforce development. However, it is worth considering a risk assessment to determine whether to recruit one candidate with a comprehensive skill set versus distributing the necessary skills across a multiskilled management team. Many job descriptions emphasised leadership, coaching and change management experience and/or competence, demonstrating a desire to transform aged care services to meet new standards and consumer expectations. It is prudent to consider that in other fields, many of these experiences and/or competences are a standalone specialty; for example, change management within the human resources discipline. The complex multifaceted nature of advertised aged care manager positions may disadvantage services and hinder the recruitment process as the roles and associated skillsets are too wide for any one staff member. One possible solution could be the use of multiskilled management teams, these teams are quite common in health services in Australia and Internationally. However, within the aged care sector the onus seems to be on the aged care manager to possess all the specialist skills to manage the day-to-day demands of contemporary aged care service.

The advertised aged care manager positions demonstrate that aged care services prioritise recruitment of a clinical manager. Elevating nurses with little or no managerial expertise into the aged care management role seeks to fulfil the dual purpose of maintaining a minimum registered nurse staffing ratio whilst keeping human resources costs down and avoiding a supernumerary staff member. This may lead to poor managerial performance resulting from

an overloaded role with too many competing responsibilities. There is growing need for a dedicated aged care manager that does have clinical duties.

Most job descriptions required a demonstrated "passion" for aged care and/or sustained experience in aged care and an understanding of Aged Care Quality Standards. This is in contrast to novel or innovative thinking that is often developed from past or current experiences in different fields such as public healthcare. As such, services may be drawing from the same workforce pool yet expecting new ideas and innovative thinking. In addition, with the high levels of churn, many roles may now be being picked up by generalist aged care managers that can talk-the-talk and walk-the-walk whilst being limited in their ability to innovate. In addition, there may be a false assumption that an experienced clinician is automatically qualified to be a manager of leader which may not indeed be the case. A specialist aged care manager is a significantly different career to a clinical career and requires at least a minimum educational qualification and subsequent training related to the specific contextual needs (workforce planning).

It is clear that future aged care managers will be working within a new human rights based regulatory environment given the accepted recommendations from the Royal Commission as well the transition to new aged care funding model [9]. Many job descriptions specifically mentioned competence in Aged Care Quality Standards /Accreditation and the then-ACFI, demonstrating the significance and complexity of the regulatory and funding landscape requiring specific experience and expertise to: 1) maximise quality and meet accreditation standards and 2) Ensure financial viability through occupancy and ACFI.

It was evident that there are five key themes that services are looking for within their aged care managers (seen in Figure 7), these were: Interpersonal Communication Skills, Quality Improvement Skills, Leadership/Human Resources Management Skills, Organisational/Time Management Skills and Business Development Skills -including Financial Management. These capabilities were all underpinned by a genuine passion for aged care.

FIGURE 7 – KEY THEMES IDENTIFIED THROUGH THEMATIC ANALYSIS OF AGED CARE MANAGER JOB DESCRIPTIONS.

LIMITATIONS.

The data collected and collated were from the public domain in Australia only, thus the findings may not be easily generalisable to other countries. With the impending changes to the Australian aged care sector as the industry and government respond to the Royal Commission recommendations, further refinement of advertised job descriptions is likely. Nonetheless, the findings from this study provide the first baseline industry expectation for aged care managers across Australia.

RECOMMENDATIONS

Services should consider the opportunity to integrate clinical and non-clinical managers within their aged care services. Such an approach would require an assessment of the multiple levels of clinical and organisational governance as well as centralised support services in many aged care services across Australia. It may be advantageous to consider the applicability of non-clinical managers that may have skills and expertise crucial to the success of individual aged care services where a knowledge gap exists such as business development, finance, and human resources management. Some forward-thinking organisations or those who experience extreme workforce shortages are already implementing this with varying levels of success. Services may also benefit from providing adequate support to their non-clinical managers, such as introducing peer support networks with other managers, regular supervision and support from senior leadership as well as ensuring adequate ongoing professional development including clinical governance for non-clinician managers.

Within the sector, it may now be time to consider minimum competencies for aged care managers or minimum mandatory standards. This requirement should encompass the aforementioned themes of; interpersonal communication, quality improvement, leadership/human resources, organisational/time management and business development including financial management. It may also be advantageous to align these minimum mandatory standards to the Australasian College of Health Services Management's Revised Master Health Service Management Competency Framework [5], and/or develop a substructure specific to aged care managers. These minimum standards could be used to uplift the standards of existing staff and provide a knowledge pathway for staff to move into management.

Aged care organisations and tertiary institutions should look to collaborate to ascertain the training needs of new aged care managers and the existing workforce through such means as ongoing mentoring and development of bespoke training specific to the sector. An example of this can be seen in Western Sydney Universities' suite of graduate courses in aged care management that have been co-designed with their industry partner Opal Healthcare [19]. Furthermore, services should review the existing knowledge capital within each facility's leadership team, moving away from the jack-of-all-trades ideology and consider specialty areas of knowledge and management competence within management teams. Aged care managers should complement the existing management team with their specialised skill set. This leadership talent assessment can be enormously helpful in identifying strengths and weaknesses of a leadership team and any skill gaps [20].

In addition, there may be scope for accrediting bodies such as the Australasian College of Health Services Management to identify Aged Care Management as an area of specialty and advocate to aged care organisations the need for appropriately trained and credentialled managers in these roles at the facility level. With well over 2,600 aged care facilities across the country, should each of these have an appropriately skilled and credentialed manager in employment, it may serve to reduce many of the challenges identified by the Royal Commission. Further, with comprehensive aged care reforms underway and changes to regulatory and funding models, it may be advantageous to engage appropriately skilled managers into aged care services in the short term to manage this transition and trial their effectiveness in the longer term.

The management workforce in aged care continues to be a perplexing area of workforce recruitment and retention. Services should consider the profile and desirability of aged care as a sector of choice for skilled and capable graduate managers. In particular services should consider how to attract and retain highly skilled managers such as salary, flexibility or other benefits. Further, it is essential that the true cost of ensuring strong managers and adequate management systems/team are indeed reflected and

prioritised as an area of need with any future changes to funding distribution in aged care.

CONCLUSION

The aged care sector in Australia is exceedingly complex with many areas for improvement, including the sector's management workforce. This paper has outlined the poor financial performance of services, complex management hierarchies and limited capability of traditional aged care clinician-managers to undertake contemporary aged care management roles. As many improvements are made across the sector in response to the Royal Commission, aged care services and professional bodies must consider the role of aged care managers and the need for specialised appointments beyond the traditional nurse-manager. There is an opportunity to adopt a more diverse management structure including the appointment of appropriately qualified and skilled health services managers and developing opportunities to upskill existing staff. This workforce issue will not be solved overnight however, sustained support by organisations, lobbying by the accrediting body and improvements of services as a result of these appointments will assist in creating a future of high-performing aged care services that provide efficient, effective and safe care to the older population of Australia.

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RESEARCH ARTICLE

THE EFFECT OF WORK MOTIVATION AND JOB INVOLVEMENT TO IMPROVE ORGANIZATIONAL COMMITMENT AT HASANUDDIN UNIVERSITY HOSPITAL, INDONESIA

Nurintan Malik[1], Alimin Maidin[1], Andi Indahwaty Sidin[1], Irwandy[1], Syahrir A Pasinringi[1], Syamsuddin[2]*

1. Hospital Administration Study Program, Faculty of Public Health, Hasanuddin University, Indonesia
2. Accounting Department, Faculty of Economics and Business, Hasanuddin University, Indonesia

Correspondence: intanmalik995@gmail.com

ABSTRACT

BACKGROUND:

Employees who have high work motivation and good job involvement can increase organizational employee commitment. This involves high levels of giving support, direction of goals, and involvement in optimizing themselves in carrying out tasks. This study aims to analyze the effect of work motivation and job involvement on nurse's organizational commitment at the Hasanuddin University Hospital, Makassar, Indonesia in 2022.

METHODS:

Quantitative research has been completed using an observational study with a cross sectional study design. The sample used in this study involved 172 nurses at Hasanuddin University Hospital. The instrument used in this study was a questionnaire that has been tested for validity and reliability. Data analysis using Chi-Square test and Path Analysis was undertaken.

RESULTS:

Study findings showed that there is an effect of work motivation on nurses' organizational commitment ($p<0.001$), work motivation on job involvement ($p<0.001$), job involvement on organizational commitment ($p=0.003$), and there is no effect of work motivation on organizational commitment through job involvement ($p=0.051$).

CONCLUSION:

Work motivation and job involvement directly affect the organizational commitment of nurses. It is recommended to the hospital to pay attention to work motivation and the involvement of nurses in their work in order to maintain commitment while developing direction and goals, hospital services, quality and future careers.

KEYWORDS

work motivation, job involvement, organizational commitment, nurse, hospital

INTRODUCTION

Turnover is a very important factor in human resource management and the formation of human capital in a hospital [1]. This issue is crucial, especially for staff with non-civil servant status and working style of the millennial generation which is one of triggering factors for turnover in an organization. The millennial generation is also known to be disloyal to a job or company, so most millennial employees only stay in a job for less than three years [2].

Employee turnover refers to the departure of individuals from an organization, whether initiated voluntarily or involuntarily. Ultimately, it results in a quantifiable count of employees exiting the organization within a specific timeframe [1,3]. High turnover causes hospitals to be ineffective because they lose experienced employees and need to train new employees and it also affects work progress, productivity and can bring a negative reputation for a hospital [4-6]. High turnover rates indicate low organizational commitment of employees, where organizational commitment as an attitude related to work which is closely related to performance and employee turnover [7].

Organizational commitment is very important in terms of organizational behavioral science or in Human Capital Management. Organizational commitment of an employee to the organization is a behavioral dimension that can be used to measure and evaluate the strength of employees to be able to survive and do their duties and fulfill their obligations to the organization [8]. Organizational commitment itself has an impact in the form of benefit and advantage especially to the organization where the employee is sheltered because commitment in the organization will determine how long an employee will stay with the organization. An employee who has a strong commitment is an asset for every organization where the organization wants to keep and maintain staff [9]. There are several factors that can increase employee organizational commitment, but the most influential factor is related to motivation and job involvement [10-16].

Motivation is a power that encourages individuals to do something in achieving results or goals [10]. It is important for organizational/company managers to know what motivates employees or their subordinates, because this factor will lead the organization on a path to achieving its goals [11-13]. Besides work motivation, a factor that can affect organizational commitment is job involvement. Job involvement in work is conceptualized as when a member of the organization who carries out their role in their job description, works and expresses themselves physically, cognitively and emotionally during a work which means that work is important for an individual's life [14]. Research on job involvement has shown a positive effect on work. Firstly, job involvement itself is a positive individual experience [15]. Secondly, job involvement is related to health and good work effects employees [16]. Thirdly, job involvement helps individuals to gain benefit from a stressful job. Finally, job involvement is positively correlated with organizational commitment [16] and in the end is an impact on employee performance in their lives [14].

Based on the preliminary study conducted in the Hasanuddin University Hospital, it was found that the nurse turnover numbers fluctuated every year in 2020-2022. A high turnover increase of 15% can have an impact on Organizational Commitment which is indicated by the existence of low nurse organizational commitment where the most influential factors are Work Motivation and job involvement. The purpose of this study was to analyze the influence of work motivation and job involvement on organizational commitment at the hospital.

METHODS

RESEARCH LOCATION AND DESIGN

This study was conducted at Hasanuddin University Hospital Makassar. The research method used was an analytic observational with cross-sectional approach [17].

POPULATION AND SAMPLE

The study population comes from all nurses who provide service and work at this hospital. Participants were asked to voluntarily participate by signing a written informed consent. The sample that was successfully collected consisted of 172 participants.

INSTRUMENT DAN PROCEDURE

The instruments consisted of a closed questionnaire adapted from previous studies. The questionnaire included measures of work motivation developed by Tania and Susanto [18], job involvement by Hariani et al. [19], and organizational commitment by Kelven et al. [20]. The validity and reliability of the questionnaire was tested using Bivariate Pearson correlation and Cronbach's alpha (α). Data collection was carried out directly by a researcher at

the hospital by distributing structured questionnaires containing questions about variables filled by respondents.

This study has received ethical approval from the Ministry of Education, Culture, Research, and Technology, Hasanuddin University, Faculty of Public Health (Number 8564/UN4.14.1/PT.01.02/2022).

DATA ANALYSIS

Data were analyzed by univariate, bivariate and multivariate variables. The relationship between the two variables was tested with the Chi-Square test using IBM SPSS (version 24) software. Multivariate analysis using Path Analysis was undertaken with the SPSS AMOS Program.

RESULTS

Table 1 shows the frequency distribution based on the characteristic of respondents in the research. These results showed that most of the respondents are in the age group of 20-35 years for 146 respondents (84.9%). In terms of gender, most of the respondents were female for 141 respondents (88.0%). Based on the work duration, most worked for >6 years for 95 respondents (55.2%). Based on their latest education level, most of respondents have a bachelor's degree for 99 respondents (57.6%). Based on employment status, most were non-civil servant employees for 140 respondents (81.4%). Civil servant nurses are individuals recruited and employed by the government to provide public services. Non-civil servant nurses, on the other hand, are only employed by hospitals through contracts or agreements.

TABLE 1. DISTRIBUTION OF RESPONDENT BASED ON THE CHARACTERISTIC OF NURSE RESPONDENTS AT THE HOSPITAL IN 2022

Characteristic of Respondent		Total Number (n=172)	Percentage (%)
Age	20-35 years old	139	80.8
	36-45 years old	33	19.2
	> 45 years old	0	0.0
Gender	Male	31	18.0
	Female	141	82.0
Work Duration	1-5 years	64	37.2
	6-10 years	95	55.2
	11-15 years	11	6.4
	> 15 years	2	1.2
Last Education	Diploma	34	19.8
	Bachelor	99	57.6
	Master	9	5.2
	Other	30	17.4
Status of Employment	Civil Servant	32	18.6
	Non Civil Servant	140	81.4
Service Unit	Outpatient	22	12.8
	Inpatient and eye care	83	48.8
	ICU	14	8.1
	NICU	8	4.7
	IGD	17	9.9
	Hemodialysis	12	7.0
	Chemotherapy	15	8.7

TABLE 2. DISTRIBUTION OF RESPONDENTS BASED ON WORK MOTIVATION, JOB INVOLVEMENT AND ORGANIZATIONAL COMMITMENT AT THE HOSPITAL IN 2022

	Total Number (n=172)	(%)
Work Motivation		
High	79	45.9
Low	93	54.1
Job Involvement		
Good	74	42.0
Bad	98	57.0
Organizational Commitment		
High	70	40.7
Low	102	59.3

TABLE 3. THE EFFECT OF WORK MOTIVATION ON ORGANIZATIONAL COMMITMENT, WORK MOTIVATION ON JOB INVOLVEMENT, AND JOB INVOLVEMENT ON ORGANIZATIONAL COMMITMENT AT THE HOSPITAL IN 2022

Work Motivation	**Organizational Commitment (n=172)**				***p-value***
	High		**Low**		
	n	**%**	**n**	**%**	
High	53	63.1	31	36,9	<0.001
Low	29	33.0	59	67.0	
Work Motivation	**Job Involvement (n=172)**				***p-value***
	High		**Low**		
	n	**%**	**n**	**%**	
High	48	57.8	35	42.2	<0.001
Low	25	28.1	64	71.9	
Job involvement	**Organizational Commitment (n=172)**				***p-value***
	High		**Low**		
	n	**%**	**n**	**%**	
Good	45	61.6	28	38.4	0.003
Bad	37	37.4	62	62.6	

Table 2 shows that from 172 respondents it is known that most of them have self-reported low (poor) work motivation, job involvement and organizational commitment.

Table 3 shows the relation between independent variable and dependent variables. Based on the result of analysis, it can be seen that there is a relation among the variable of work motivation, job involvement and organizational commitment of nurses at the Hospital in 2022. The result of bivariate analysis with the Chi-square test showed that there is association between the dimension of work motivation and organizational commitment with a p value <0.001, variable work motivation on the job involvement variable with p-value <0.001, and job involvement variable on organizational commitment with p-value = 0.003 which means work motivation and job involvement are very significant related to organizational commitment as well as work motivation and job involvement..

TABLE 4. PATH ANALYSIS AMONG WORK MOTIVATION, JOB INVOLVEMENT AND ORGANIZATIONAL COMMITMENT AT THE HOSPITAL IN 2022

Variable	Coefficient	p	Description
Work Motivation→ Job Involvement	0.399	<0.001	Direct
Work Motivation → Organizational Commitment	0.446	<0.001	Direct
Job Involvement→ Organizational Commitment	0.216	0.003	Direct
Work Motivation → Job Involvement→ Organizational Commitment	0.086	0.051	Indirect

Table 4 shows the results of path analysis of the direct effect of work motivation on organizational commitment as 0.446 (p<0.001) while the indirect path coefficient of work motivation on organizational commitment through job involvement is not significant (p=0.051) which means that work motivation has no effect on organizational commitment of nurses through job involvement.

DISCUSSION

There is an effect of work motivation on the organizational commitment of nurses at the Hospital. The statistical analysis showed that the work motivation variable has a significant effect on organizational commitment with a value for 46.6% and this is supported by previous research [21]. The aspect of work motivation needs serious attention from managers because it can generate, direct, and maintain behavior that related to work environment [19]. Several factors can contribute to the employee's organizational commitment including work motivation. Work motivation is the force that drives, provides rationale, and creates willingness in an individual to take action. [22]. Individual motivation is supported by three things: can do, reason to, and energized to. Can do focuses on self-efficacy and control, reason to is related to a self-determination, flow, interests, and goal orientation. Energized to is a higher level that causes a person to feel enthusiastic about being involved [23].

Job involvement is a business management concept involving high commitment or enthusiasm of employees related to long-term company activities. The results of this study showed that there was an effect of work motivation on job involvement with a value for 21.6% which is in line with research conducted by Istiqomah et al. [24], Rahmi et al. [25] and Maqsood et al. [26] which showed that work motivation made a significant contribution to job involvement as well as job involvement to organizational commitment. Therefore, it is important for managers to increase job involvement to increase job motivation and organizational commitment [27]. Kim and College [28] stated that job involvement focuses on the relationship between an employee and his or her duties and commitment emphasizes the relationship between an employee and the organization. According to Robertson-smith and Markwick [29], employees who are not engaged do not show enthusiasm and have no real passion for their work and for the organization. Employees who are not engaged do not enjoy their work and do not want to give all their support to make the organization successful.

Furthermore, there is an effect of job involvement on organizational commitment with a value for 21.6% and was in line with Parimita and Farhan [30]. The result also showed that the dimension of organizational commitment is mostly low which seems to contribute to the low result of organizational commitment with a percentage of 57.0%. Employee commitment is essential because high organizational commitment brings positive results such as high performance, low turnover rate and low absenteeism. Marciano [31] explained that an employee who has an attachment will be motivated to give their best effort. Low job involvement does not only have an impact on performance but also increase the desire to move (such as find another job or quit). A dedicated and committed workforce plays a pivotal role in fostering company growth. Therefore, the organizational commitment will create a sense of belonging for staff to the company.

This study also identified the direct and indirect effects of work motivation on organizational commitment through job involvement. The results showed that there is no indirect effect between work motivation on organizational commitment through job involvement. This means that without the intervention of job involvement, work motivation can directly affect organizational commitment. This result of this study is supported by Mohsan et al., [32] who showed that the work motivation variable can have a significant effect on organizational commitment without job involvement. This is also supported by Warsi et al. [33] who concluded that work motivation can have a greater direct influence without enabling through job involvement variable. This shows that high work motivation of an employee can have a direct positive effect and increase the organizational commitment of employees. Herminingsih and Sumanto [34] stated that low commitment to the organization is considered to be related to low work motivation. The lower the work motivation, the lower the commitment to the organization. Conversely, increased work motivation will increase commitment to the organization. Trisnaningsih [35] stated that the motivation to achieve the goals set by the company can affect commitment to the organization as an effort to achieve common goals.

This study has some limitations. There were incomplete responses from some participants in filling out the questionnaire in this study, but a reasonable cohort participated in data collection (172 nurses). Additionally, it is noteworthy that the factors influencing organizational commitment among nurses in this study are limited to two variables—namely, work motivation and job involvement—despite the existence of numerous other factors that can impact organizational commitment. This study was for one hospital only and so the results will be useful for local management, but care should be taken regarding translation of results into other hospital organizations.

CONCLUSION AND RECOMMENDATION

The results of this study showed that work motivation has an effect on organizational commitment and job involvement. Work motivation has no effect on organizational commitment through job involvement. In other words, job involvement does not have a mediating role of work motivation on organizational commitment. The recommendation is for the hospital to prioritize enhancing work motivation and the engagement of nurses in their responsibilities. This approach is vital for sustaining commitment while simultaneously advancing the hospital's direction, goals, service quality, and future career opportunities. Furthermore, it is advisable to implement training initiatives for managers, focusing on leadership skills, including training in providing constructive feedback and coaching subordinates.

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RESEARCH ARTICLE

IMPACT OF LEADERSHIP STYLE ON EMPLOYEE PERFORMANCE AND JOB SATISFACTION AMONG JORDANIAN PHYSIOTHERAPISTS

Hashem Nader Aljaddouih[1], Mohammed Yousef Alkhraishi[2]*

1. College of Business and Economics, Business Administration Department, Qatar University, Doha, Qatar
2. Abu Dhabi Health Services Company (SEHA), Al Dhafra Hospitals, Nursing Midwifery Clinical Education and Research Department, Abu Dhabi, United Arab Emirates.

Correspondence: hashemnaderpt@yahoo.com

ABSTRACT

Leadership philosophies are essential organizational practices, especially when it comes to promoting and enhancing worker collaboration and job satisfaction. This study aims to ascertain and explore the relationship between job satisfaction and job performance among Jordanian physiotherapists and transformational leadership. Additionally, looks at whether job satisfaction and organizational citizenship behaviours operate as a mediator in the link between transformational leadership and worker performance. This study's design involves a quantitative correlation analysis conducted on a conveniently chosen sample of Jordanian physiotherapists from different healthcare facilities to examine the relationship between their performance level and leadership practices, specifically transformational leadership style, as well as any potential mediating role that organizational citizenship behaviours and job satisfaction may have on that relationship. Additionally, an online questionnaire for 123 physiotherapists in a different facility is used to study the proposed relation connecting transformational leadership style and therapist satisfaction level.

Data were acquired about performance, job satisfaction, and organizational citizenship behaviours of therapists as well as their opinions of the leadership styles exhibited by the facility leaders. Organizational citizenship behaviours (OCB) and job satisfaction (JS) fully mediated the relationship between transformational leadership and physiotherapy performance; as a result, the impact of transformational leadership style (TLS) on performance was indirect since the direct influence wasn't statistically significant. Additionally, TLS has a positive and substantial impact on job satisfaction and organizational citizenship behaviours by regression analysis; likewise, OCB and JS have a positive significant effect on performance (p-value <.001). Transformational leadership and performance among Jordanian physiotherapists are not significant directly but are significant indirectly by the mediator (OCB and JS). Because it impacts worker job satisfaction, the standard of healthcare services provided, and the patient experience in this organization, it encourages the development of transformational leadership abilities in healthcare facilities and ongoing training for leaders in this area.

KEYWORDS

employee performance, healthcare facility, job satisfaction, organization citizenship behaviours, physiotherapist, transformational leadership.

INTRODUCTION

Management is how to achieve the goals you set by using what resources you have and following specific tactics in your organization. So, the critical point is how you will reach the goals effectively and efficiently by following the basic concepts of management planning, organizing, staffing, directing, and controlling [1].

Leadership is a dynamic connection between leaders and followers who aim to bring about tangible transformations that align with their shared objectives [2]. It is a process that involves influencing, controlling, and resulting from dealing and correspondence between a leader and subordinates. As such, it has practical dimensions rather than theoretical concepts, as it is explained by the leader's actions as well as the perceptions and attributions of their followers. Leadership has a significant impact on how healthy workers accomplish company goals and how to develop and enhance their performance [3].

In examining the concept of Leadership as a process, it emerges as an influence between leader and follower. This dynamic describes a two-way interaction in which both parties influence each other. Furthermore, a review of prior research on Leadership reveals that its key features include the recognition of Leadership as a process, the importance of flexibility, dynamics within the group, and the presence of a shared perspective. These factors are essential for achieving common goals together.

Transformational leadership (TLS) stimulates team spirit and encourages team members to get the best performance [4]. Transformational leadership includes how the leaders connect the followers with the organization's identity and enhance their feeling as an essential part of the organization to take greater ownership of their work. Furthermore, the leader should understand the strengths and weaknesses of their team members so that the leader can assign suitable tasks to suitable persons based on their performance.

Performance is characterized by an ability to do tasks accurately and precisely [5]. We can also describe it as an employee's work, or any effort carried out for the good of the company. Performance management, or PM, ensures that organizational procedures are carried out in a proper and appropriate manner, matching the goal of maximizing staff productivity. Performance appraisal (PA) is a procedure for assessing and analyzing individual or group performance tasks [5]. In addition, it is described as an activity or method for completing a special task in healthcare organizations. Thus, the talents and skills necessary to do duties correctly and without any difficulties or constraints are what constitutes healthcare professional performance [6].

Research on organizational behaviour has highlighted the significant impact of employees' emotional well-being on their workplace performance and engagement. Positive emotional experiences are essential in motivating employees, increasing their desire to be more involved and more engaged in their work [7]. Accordingly, job satisfaction, including employees' positive and negative attitudes toward their jobs, is an essential component of their overall work experience [8]. Additionally, intrinsic motivation is closely related to job satisfaction, and research shows the extent to which employees feel rewarded in their jobs influences their job satisfaction levels [9]. This intrinsic motivation is necessary to develop organizational citizenship behaviour (OCB). It also includes what contributes to organizational effectiveness [10].

OCB performance and competency performance contribute, demonstrating the importance of non-coercive but critical discrimination to improve organizational performance to enhance these behaviours in terms of emotional well-being, job content, internal tension, and organizational citizenship which will be obtained [11].

The purpose of this study was to investigate the impact of Leadership styles, including Transformational Leadership style, on employee performance and job satisfaction by examining the relation between transformational leadership style and employee performance, transformational leadership style and job satisfaction, and transformational leadership style and organizational citizenship behaviours. Then examine if job satisfaction or organizational citizenship behaviours mediate between two variables (leadership style and employee performance).

The significance of the study is that thereis little research on leadership practices and other factors affecting job satisfaction and employee performance among Jordanian physiotherapists since most previous studies

focus on disciplines like nurses and doctors while neglecting allied health practitioners like physiotherapy. Therefore, this study is essential to search for potential threats and factors affecting the satisfaction and performance level of physiotherapists; this study seeks to assess the effects of leadership practices on job satisfaction and employee performance among Jordanian physiotherapists.

METHODS

A quantitative correlation research design approach was used for this study by using a cross-sectional study among convenience-selected samples from Jordanian physiotherapists in different hospitals using a self-administered questionnaire with a correlational study to investigate the possible relation connecting leadership practices, job satisfaction, organizational citizenship behaviours, and employee performance.

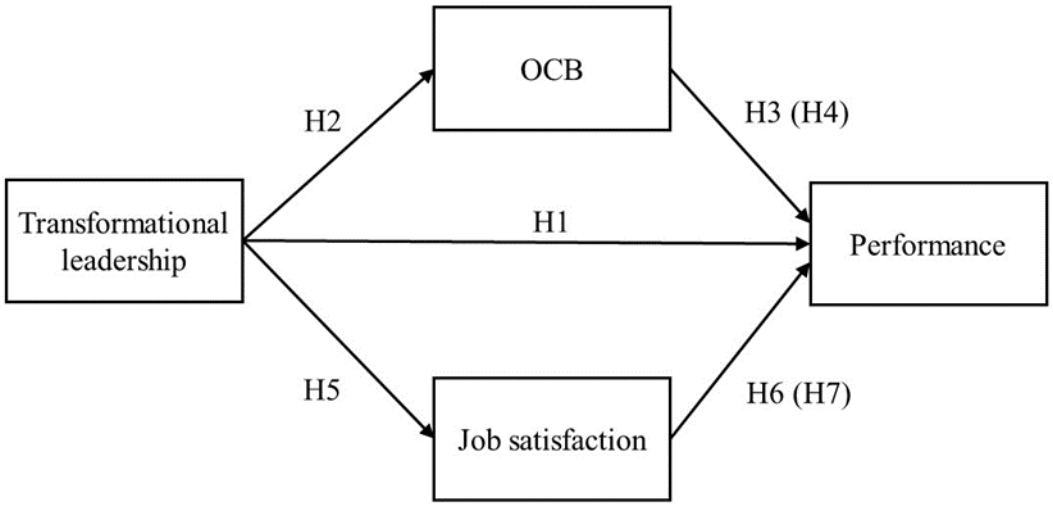
RESEARCH VARIABLES

In this study, we consider transformational leadership as an independent variable and employee performance as a dependent variable. On the other hand, organizational citizenship behaviours and job satisfaction are considered mediator variables.

CONCEPTUAL FRAMEWORK

This research model aimed to examine the link between these variables in terms of correlation and investigate the significant role of organizational citizenship behaviour and job satisfaction as a mediator variable in this relationship. Figure 1- below represents the Conceptual framework of this study.

FIGURE 1- CONCEPTUAL FRAMEWORK



HYPOTHESIS

The following hypotheses will be tested:

H1: Transformational leadership has a positive impact on performance among Jordanian physiotherapists.

H2: Transformational leadership style has a positive impact on organizational citizenship behaviour among Jordanian physiotherapists.

H3: Organizational citizenship behaviour of Jordanian physiotherapists is positively related to performance.

H4: Organizational citizenship behaviour mediates the relationship between transformational leadership and the performance of Jordanian physiotherapists.

H5: Transformational leadership has a positive impact on job satisfaction among Jordanian physiotherapists.

H6: Job satisfaction has a positive impact on performance among Jordanian physiotherapists.

H7: Job satisfaction mediates the relationship between transformational leadership and the performance of Jordanian physiotherapists.

DATA COLLECTION AND TECHNIQUE

The study sample consisted of Jordanian physiotherapists employed in various healthcare institutions, specializations, and nations, who were chosen based on convenience. Out of 140 questionnaires that were provided online, 123 individuals were selected to represent the research sample. Data for the study were gathered via a survey

questionnaire. The questionnaire consists of several sections, such as questions about leadership practices, job satisfaction, employee performance from the previous year, organizational.

Citizenship behaviour with two dimensions (organizational citizenship behaviour targeting individuals and organizational citizenship behaviour targeting organizations itself), and demographic characteristics of participant (age, gender, education level, marital status, years of experience, work specialty, place of employment) were collected.

TRANSFORMATIONAL LEADERSHIP SCALE

Questionnaires were adapted from a MLQ (20 questions to examine transformational leadership practice) [12]. Items were arranged and evaluated on a 5-category scale (1= not at all, 2= once in a while, 3= sometimes, 4= fairly often, 5= frequently if not always).

JOB SATISFACTION SCALE

The Spector Job Satisfaction Survey was used as the source of the questionnaires [13]. The employee satisfaction section of this scale (after adaptation) consists of nine items that were ranked on a five-point rating system (1 being strongly disagreed, 2 disagreed, 3 neutral, 4 agree, and 5 strongly agree).

EMPLOYEE PERFORMANCE SCALE

Performance appraisal score from recent year annual appraisal for each employee with relevant score form (excellent=5, very good=4, good=3, fair=2, poor=1).

ORGANIZATIONAL CITIZENSHIP BEHAVIOUR SCALE

Using the Organizational Citizenship Behaviour scale [14]. With 16 questions divided into two sub-scales: an 8-item covered OCBs targeted individuals within the organization (OCBI) and an 8-item covered for OCBs targeted by the organization (OCBO). It has a 5-point Likert-type scale (1= never, 2 = rarely, 3= sometimes, 4 = very often, 5 = always).

ONFIDENTIALITY AND ETHICAL ISSUES

Ethical approval for this research was obtained from all participants before the commencement of the survey. The first page of the survey included a consent form that participants were required to sign. Proceeding with the survey indicated their agreement and acceptance of all guidelines outlined in the survey, thus constituting ethical approval for this research. All information provided will remain confidential, and participants have the right to withdraw from the study at any time during the research process.

RESULTS

123 Physiotherapists from Jordan working in various healthcare institutions took part in the study. The following is an analysis of data reports produced by IBM's SPSS software regarding demographic information, including gender, age, marital status, degree of education, kind of job, location of employment, and years of experience. Table 1 result demonstrates the demographic findings.

VALIDITY

The questionnaire was received from 123 respondents with 20 questions covering transformational leadership practice (TLS) (20 items), job satisfaction questions JS (9 items), organizational citizenship behaviour individual OCBI (8 items), and organizational citizenship behaviours organization OCBO (8 items).

Using SPSS, we gathered data on the Validity and the correlation value between the item of each scale and the item with a total score of 5%. N is the total number of survey respondents, which is 123 physiotherapists.

Factors analysis for all components of variables (TLS, JS, OCB) shows that the component matrix absolute value for all questions in all variables was more than 0.4 (critical value) except one question from TLS, three questions from JS, and four questions from OCB so we will exclude these questions from the questioner and the remaining questions were valid.

RELIABILITY

The reliability of each scale's questions was measured from SPSS using Cronbach's Alpha. Cronbach's Alpha value indicates that all items are reliable (Table 2).

TABLE 1 -DEMOGRAPHIC CHARACTERISTICS OF JORDANIAN PHYSIOTHERAPIST IN THIS STUDY

Demographic Factors		Frequency	Percentage
1. Gender	Male	97	78.9
	Female	26	21.1
	Total	123	100
2. Age	20-29 yrs.	40	32.2
	30-39 yrs.	24	19.5
	40-49 yrs.	59	48
	50 yrs. and above	0	0
	Total	123	100
3. Years of Experience	1-5	14	11.4
	6-10	28	22.8
	11-15	33	26.8
	16 and above	48	39
	Total	123	100
4. Marital status	Single	41	33.3
	Married	81	65.9
	Divorce	1	8
	Total	123	100
5. Education Level	Diploma	0	0
	Bachelor	122	99.2
	Master	1	8
	Total	123	100
6. Specialty	Orthopedics	1	8
	Neuro	36	29.3
	Pediatrics	53	43.1
	Cardiopulmonary	33	26.8
	Total	123	100
7. Workplace	Hospital	56	45.5
	Healthcare center	3	2.4
	Rehabilitation facility	59	48
	Another place	5	3.3
	Total	123	100

TABLE 2 -RELIABILITY TEST

Variables	Cronbach's Alpha	Items
Transformational Leadership	94.5%	20
Job Satisfaction	74.8%	9
Organization Citizenship Behaviours	85.1 %	16

CORRELATION ANALYSIS

This study's objective is to investigate the correlation between TLS and PE, OCB, and JS as a mediator to validate the proposed hypothesis.

The results (Table 3) of the correlation between transformational leadership and physiotherapist performance show that the correlation coefficient is r = .123, which is a positive correlation, but it is statistically not significant as its p-value of 0.174 is more than the significance level (a= 5 %). While the result proves the positive relation between Transformational leadership and the physiotherapist's organizational citizenship behaviour with a correlation coefficient r = .699, and the relations were significant since the p-value is < 0.001 is less than the significance level (5%), add to that transformational leadership shows a positive correlation with physiotherapist's job satisfaction and the correlation coefficient is r= .509 which is a positive correlation and significant as its p-value is < 0.001 is less than the significance level (5 %). Furthermore, job satisfaction among Jordanian physiotherapists shows a positive relation with physiotherapist performance, with a correlation coefficient of r = .259, and the relationship is significant since the p-value is < 0.05 and is less than the significance level (5 %). Also, physiotherapists' organizational citizenship behaviour shows a significant positive relation with physiotherapist performance with a correlation coefficient r =.250, and the relationship is significant since the p-value is < 0.001 and is less than the significance level (5 %).

TABLE3 -CORRELATIONS OF VARIABLES

Variable	Mean	SD	TLS	PE	JS	OCB
Transformational Leadership	3.4760	.73722	1			
Performance	3.78	.730	.123	1		
Job satisfaction	3.0668	.53206	.509**	.259*	1	
Organizational citizenship behaviours	3.6413	.38041	.699**	.250**	.334**	1

**Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

REGRESSION ANALYSIS

By using regression analysis, we aim to understand, quantify, and predict the relationship between the two variables and study the *p*-value, which will suggest the statistical significance of the relationship. We utilized the lower confidence interval (LLCI) and the upper level of confidence interval (ULCI) to assess the significance level against the lower and higher confidence interval values.

DIRECT RELATIONSHIP

The developed hypothesis (H1, H2, H5) transformational leadership style says that TLS positively impacts employees' performance, organizational citizenship behaviour, and job satisfaction, respectively. The results presented in Table 4 provided adequate justification for the hypothesis results. Thus, TLS has insignificant results (= .1182, 95% [CI= - .329, 0.2893], t = 1.3682, p > 0.05) with employees' performance. In contrast, the result proves a positive and significant association with organizational citizenship behaviour and job satisfaction shown on the regression analyses (= 0.4796, 95% [CI= 0.3914. 0.5678], t = 10.7646, p <0.05) and (= 0.4472, 95% [CI= 0.3111, 0.5834], t = 6.5040, p <0.05). Therefore, hypothesis 1 was rejected, while 2 and 5 were supported. Based on H3, OCB has a positive effect on the employee's performance, and H6 JS styles positively affect the

employee's performance. The provided results show that hypotheses (H3 and H6) are accepted where OCB (= 0.4473, 95% [CI= 0.1062, 0.7884], t = 2.5966, p <0.05) and JS (= 0.2880, 95% [CI= 0.0669, 0.5091], t = 2.5789, p <0.05) so, both hypothesis (H3, and H6) are accepted.

MEDIATING ROLE OF ORGANIZATIONAL CITIZENSHIP BEHAVIOUR(OCB)

PROCESS MACRO (Model 4) was established by Hayes (2017) and was used to evaluate the study's hypothesis using the SPSS-26 software.

The OCB was utilized to establish a correlation between TLS style and staff performance. The findings are shown in Table 4. OCB significantly mediates the relationship between TLS and employee performance (= 0.2145, SE = 0.0972, 95% Boot CI = [0.0183, 0.3396]) because the confidence interval for the indirect effect is by no means zero (excluding zero).

MEDIATING ROLE OF JOB SATISFACTION (JS)

JS was utilized to establish a connection between TLS style and employee performance. Consequently, the findings are shown in Table 4. JS mediates the relationship between TLS and employee performance considerably (= 0.1288, SE = 0.0492, 95% CI = [0.0434, 0.2373]) because the confidence interval for the indirect effect is by no means zero (excluding zero). Table 5 summarizes the direct and indirect relationship between the variables.

TABLE 4- HYPOTHESIS TESTING (MEDIATING)

Path	Coeff	SE	T	p	LLCI	ULCI
TLS→PE	.1182	.0864	1.3682	.1738	-.329	.2893
JS → PE	.2880	.1117	2.5789	.0111	0.0669	.5091
OCB → PE	.4473	.1723	2.5966	.0106	.1062	.7884
TLS →OCB	.4796	.0446	10.7646	.000	.3914	.5678
TLS → JS	.4472	.0688	6.5040	.000	.3111	.5834
Indirect effect (TLS → OCB → PE)	.2145	.0972	-	-	.0183	.3996
Indirect effect (TLS → JS → PE)	.1288	.0492	-	-	.0434	.2373

N= 123. Unstandardized regression coefficients are reported. Bootstrap sample size=5000 LL lower limit, CI confidence interval, UL upper limit

TABLE 5- SUMMARY OF HYPOTHESES

Hypotheses	Summary	Results
H1	Transformational leadership has a positive impact on performance among Jordanian physiotherapists.	**Rejected**
H2	Transformational leadership style has a positive impact on organizational citizenship behaviour among Jordanian physiotherapists.	**Supported**
H3	Organizational citizenship behaviour of Jordanian physiotherapists is positively related to performance.	**Supported**
H4	Organizational citizenship behaviour mediates the relationship between transformational leadership and the performance of Jordanian physiotherapists.	**Supported**
H5	Transformational leadership has a positive impact on job satisfaction among Jordanian physiotherapists.	**Supported**
H6	Job satisfaction has a positive impact on performance among Jordanian physiotherapists.	**Supported**
H7	Job satisfaction mediates the relationship between transformational leadership and the performance of Jordanian physiotherapists.	**Supported**

DISCUSSION AND CONCLUSIONS

The suggested connection between transformational leadership, the independent variable, and the therapists' performance, the dependent variable, was examined and investigated using linear regression analysis. In addition, this study investigates any possible mediation role of organization citizenship or job satisfaction on the previously mentioned relation between TLS and PE.

This study's first Hypothesis (H1) aimed to lock in any possible direct impact of TLS of the Leaders on the therapists' performance. The result of the study rejects this Hypothesis because the direct effect is not significant, while the total impact of TLS on performance is significant.

But there is also other hypothesis (H4, H7) that adds OCB and JS, respectively, as mediating variables between the TLS and performance. The results of this Hypothesis support the proposed effect of OCB and JS as mediators in this relationship and found that the relationship is completely mediating, indicating that our research findings are supported [15] because his result considered job satisfaction has a full mediation role in the relationship between leadership style and employee performance. Additionally, [16] said that the dedication and degree of motivation of healthcare workers have an indirect impact on the quality of care and staff performance.

Furthermore, hypotheses (H2, H5) which study the effect of TLS on OCB and JS, respectively, are all supported since the results show a strong positive significant relation between TLS, OCB, and JS, and our findings are supported by much previous research, especially Akasaki et al. [17] which study leadership effect on physiotherapist performance and satisfaction in KSA. At the same time, Osei-Adjei [18] said that not only transformational leadership style practices of the leaders can predict employee job satisfaction. He establishes the basis of the new theory about situational leadership practice in healthcare facilities. No leadership practice best fits all situations in the healthcare facility while dealing with healthcare workers. However, on the other hand, Durowade et al. [19] found that transformational leadership shows no relation with employee satisfaction. At the same time, in a developed nation, there was a significant positive correlation between satisfaction and the reward system—which is considered a component of transactional leadership.

In addition, the hypotheses (H6) supported by this study result and JS show a strong positive significant impact on the performance of Jordanian physiotherapists. This point needs more focus and highlights since an improvement in employee performance in healthcare sectors has a positive impact on the quality of healthcare services delivered to patients. Saleh et al. [20] reported low levels of satisfaction among nurses could cause a decrease in job engagement, staff retention, and reduced motivation levels, which may have a negative impact on the quality of patient care. Negussie etl. And Mosadeghrad et al. [21,22] also found the same result in their research. At the same time, Tetteh et al. [23] connects employee satisfaction and overall organizational performance by saying that a successful organization has satisfied employees. Finally (H3) supported too, since the analysis shows a significant relationship between OCB and therapist performance, which was strongly supported by Prasetio et al. and Chiang et al. [24,25] in their study when they found that Organizational citizenship behaviour (OCB) strongly affected and improved employee's employee performance.

Increasing the satisfaction of physiotherapists and improving their performance will improve the quality of patient services. Hence, as we found in the study, satisfaction and performance have a strong positive relation with leaders' practice, which means this practice indirectly affects patient satisfaction; so, by simple practice and techniques, leaders can improve the service quality and revenue of the organization.

By applying the available literature to the concepts of this to the framework in various healthcare facilities across the globe, this research study has examined the impact of leadership roles on employee satisfaction levels. Accordingly, there are implications for patient satisfaction and the quality of healthcare services. The results of this study will contribute to the body of knowledge by explaining the variance in healthcare employee performance rates at various healthcare organizations that are provided by the model that was recommended in the current study. The present research indicates that transformational leadership practices positively and significantly impact employee satisfaction levels. The theoretical background of this study in healthcare organizations, as well as the mediating roles of OCB and JS in the relationship between TLS and performance, are therefore supported empirically by the findings of this study. Additionally, by incorporating the findings, many

healthcare facilities will benefit from this result and empirical findings. Several practical consequences were found, such as a rise in the managers' and leaders' transformational practices in healthcare facilities and more significant consideration of employees' job satisfaction to improve the working environment, which will raise employee satisfaction levels and aid in improving the quality of the work.

LIMITATIONS AND FUTURE RESEARCH

The study's sample size was small, and the research population was constrained. It ought to be planned to have a more comprehensive understanding of the most relevant elements. The participant's candor, dread of the unknown, and lack of motivation to participate in the survey because of worries about confidentiality were noted.

Future research in healthcare organizations and facilities should focus on identifying job satisfaction by addressing the additional features and other elements that were highlighted throughout the study, along with increasing the size of the participation. The study finds that among healthcare professionals, transformational leadership has an impact on job satisfaction. Including more than one leadership style, like transactional style, will give a more comprehensive view of this relationship since the healthcare system and healthcare workers are susceptible to the practice of leaders because of special consideration in the healthcare system. Many reviews and previous research hassaid that the most effective leadership practice for healthcare workers is situational leadership style, which means no one style fits every concern in that facility. However, the choice of the style is based on the situation.

Team members and employees are the most critical assets of different types of organizations. Therefore, every organization must take them into account. Organizations can only do so much with their workers if they understand the factors that lead to attrition, which may be achieved via study, assessment, and policy change.

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RESEARCH ARTICLE

GROWING EMPLOYMENT AND MANAGERS IN AUSTRALIAN HEALTH SERVICES: 2006-2021

Jo. M. Martins[1], *Godfrey Isouard*[*2]

1. President, Centre for Health Policy and Management, NSW. Australia
2. Faculty of Medicine and Health, University of New England, Armidale NSW, Australia

Correspondence: gisouard@optusnet.com.au

ABSTRACT

INTRODUCTION

This research is a continuation of the authors past contributions on this important subject, that has included the first comprehensive analysis of the composition and characteristics of health service managers in Australia, in terms of their service, qualifications and other important attributes.

OBJECTIVES

This article contains an analysis of the number and characteristics of health service managers in relation to health services provided in Australia in 2006 compared with that of 2021.

DESIGN

Design of the analyses follows specifications set by the authors for tabulations prepared by the Australian Bureau of Statistics (ABS) from the censuses of population conducted by ABS in 2006 and 2021. The analysis of health service managers in terms of growth in numbers and change in their characteristics will be reviewed.

FINDINGS

A substantial increase was found in the number of health service managers in relation to the population and people employed. Also, there have been considerable changes in the characteristics and qualifications of health service managers during the 15-year period. The study also reported on the nature of the changes in hospitals and medical and other health services, and the surge in the number of managers in medical and other services, that in 2021 outnumbered those in hospitals.

IMPLICATIONS

The findings are relevant to policy development aimed at improving the health status of the population. There were implications as well to the planning of health services, training of their labour force and related educational resources. An agenda is also put forward for additional research in view of its findings.

KEYWORDS

health service manager; health management; Australia

ABBREVIATIONS

ABS	Australian Bureau of Statistics
CEO/GM	Chief executive officer/general manager
GDP	Gross Domestic Product
M (nfd)	Manager no further defined
Med & Other	Medical & other health services
SD	Standard deviation
CV	Coefficient of variation

INTRODUCTION

Managers in the Australian health system are concerned with the improvement of the health status of people in Australia. Therefore, it is relevant to note that that life expectancy, at birth, in Australia rose from about 81 years in 2005 to 83 in 2021 [1], the period that the following enquiry is concerned with. Although the proportion of people in full health has remained about constant, the number of years in good health has increased in line with the longer life expectancy [2]. In addition to their concerns with health outcomes, managers of health services are also dealing with the efficiency of health services that in 2020/21 involved expenditures of about $220.9 billion, 10.7% of the gross domestic product (GDP), or $8,671 per head of population. This represents a substantial increase since 2005/06 when health services accounted for 8.7% of GDP. Most of the expenditure in 2020/21 was concerned with operational activities (94.7%), as only $11.7 billion was spent on capital works (5.3%). Health services in Australia are mainly financed by the public sector (70.6% in 2020/21), at federal and state/territory levels. [3].

Health service managers are engaged in both the effectiveness and efficiency of the health system, and the assessment of their number in relation to the services they manage and their attributes are important because of the vital role that they play. It is in this context, the analysis of the growth in their numbers and change in their characteristics will be reviewed from data in the 2006 and 2021 censuses of population conducted by the Australian Bureau of Statistics (ABS). The findings from the following analysis are relevant to policy development aimed at improving the health status of the population. They are also pertinent to planning of health services, training of their labour force and related educational resources.

This research is a continuation of the authors past contributions on this important subject, that has included the first comprehensive analysis of the composition and characteristics of health service managers in Australia, in terms of their service, qualifications and other important attributes.

DATA SPECIFICATIONS

The data specifications were prepared by the authors in the context of the 2006 and 2021 population censuses to ensure compatibility and comparability. Therefore, the data follows ABS' Australian occupation and industry classifications. Further details regarding ABS' classifications have been given and available in Martins & Isouard [4] [5]. However, detailed specifications of manager categories are given in the Appendix. The data for 2006 and 2021 were collected by ABS in its population censuses for those two years, in relation to the resident population of Australia. Although the data relied on answers to questions posed in those two censuses, they were subjected to post-enumeration surveys conducted by ABS to ensure their accuracy and reliability. The data is concerned with managers in hospitals and medical and other health services in the public and private sectors. However, it does not include pharmacists in private retailing because of their mixed businesses and difficulty in sorting out their activities in the provision of pharmaceutical drugs from those involving cosmetics, toiletries and other products.

As stated, the classification follows the occupation and industry classification used by ABS, with managers in four categories: managers no further defined, chief executive officers and general managers, specialist managers, and service managers.

The data is in accordance with ABS' coding for age, sex, marital status, field and level of education, indigenous status, country of birth, hours worked and individual income. To allow comparison of characteristics of health service managers, the authors requested similar data for managers in all sectors. To protect confidentiality, ABS made slight changes to some cells. They posed small differences in some cases that the authors adjusted, without significant material impact. The sources of other data used is in accordance with references given. The figures for 2021 provided by ABS are slightly different from those in previous reviews in regard to the number of employees and managers for all industries. The 2021 figures include those involved in agriculture. However, this does not lead to any differences in findings regarding health service managers, or in any material way for managers in general. Further, the authors have followed ABS' definitions of sex and gender [6]. Sex is defined as the biological characteristics of males and females. Gender refers to psychological and social characteristics that are culturally determined from belief systems of what masculine and feminine behaviour is or ought to be.

It is relevant to indicate that data used in the analysis were from tabulations provided by ABS. However, the information provided in the tables and figures are the result

of the analysis made by the authors. Thus, while the sources given are usually those from ABS' original sources the results shown are those from the authors' work.

GROWING EMPLOYMENT

In the 15-year period 2006-2021 the Australian population grew by about 23.3% to 25.4 million and that of older people over 64 years of age, who use health services more frequently, rose more so by 51.7% to 4.2 million [7].

However, this substantial growth rate in population, including the higher rate of increase in people 65 years of age and over, was well below that of the number of health services employees that rose by 78% in the same period, in contrast to the much lower growth of people employed in all industries in Australia of 32.3% (Table 1).

FLOURISHING MANAGEMENT

Moreover, the number of health service managers grew, not only at a higher rate than that of the population, but even more than the rate of increase in the number of health services employees (Tables 2 and 3). Especially in the case of medical and other services. Accordingly, while the number of hospital employees grew by 80.9% during the period 2006-2021, the number of hospital managers rose by 95.1%, but the number of managers in medical and other services increased even more by 150.4% in comparison with 74.8% in the case of employees in the same services (Tables 2 and 3).

TABLE 1. NUMBER OF PEOPLE EMPLOYED IN HEALTH SERVICES AND ALL INDUSTRIES, AUSTRALIA, 2006 AND 2021

Industry	Number people employed 000s		Change 2006-2021 %
	2006	2021	
All industries	9,104.2	12,049.4	+32.3
Hospitals	303.9	549.8	+80.9
Medical & other health services	270.0	471.9	+74.8
All health services	573.9	1,021.7	+78.0

Sources: References [8] [9]. Analysis made by the authors

TABLE 2. NUMBER OF PEOPLE EMPLOYED IN HEALTH SERVICES AND ALL INDUSTRIES, AUSTRALIA, 2006 AND 2021

Industry	Number of managers 000s		Change 2006-2021 %
	2006	2021	
All industries	1,202.3	1,505.3	+25.2
Hospitals	10.9	21.2	+95.1
Medical & other services	8.5	21.4	+150.4
All health services	19.4	42.6	+119.4

Sources: References [10] [11]. Analysis made by the authors.

TABLE 3. NUMBER OF PEOPLE EMPLOYED BY MANAGER IN HEALTH SERVICES AND ALL INDUSTRIES, AUSTRALIA, 2006 AND 2021

Industry	Employees per manager		Ratio change 2006-2021
	2006	2021	
All industries	7.6	8.0	+0.4
Hospitals	27.9	25.9	-2.0
Medical & other health services	31.7	22.1	-9.6
All health services	29.6	24.0	-5.6

Sources: References [10] [11]. Analysis made by the authors.

It is a characteristic of health services that the ratio of employees per manager is rather large. While there were on average about 8 employees per manager in all industries, the number of employees per manager in health services was in the 20s. Nevertheless, the large increase in the number of health service managers, especially in the case of medical and other services, meant that the

number of employees per manager in health services fell from 29.6 in 2006 to 24.0 in 2021 (Table 3).

In terms of health services expenditure, on average $4.2 million was spent in hospitals in 2020/21 per manager, $5.2 million in the case of medical and other services, or $4.8 million on average per all health service managers (Table 2; [3]).

RISING MIDDLE LEVEL MANAGERS

In a highly technical service, specialist managers usually concerned with the provision of more direct services made up 70.7% of managers in health services in 2021. Their proportion was substantially higher in hospitals (76.4%) than in medical and other health services (69.6%). This contrasted with a much lower proportion in all industries (57.5%).

Chief executive officers and managers no further defined constituted 16.5% of the total number of health managers. Their proportion in hospitals was much lower (12.7%) than that in medical and other health services (19.9%), possibly due to the larger scale of operation of hospitals. This compared with an average of 13.1% for all industries.

TABLE 4. HEALTH AND ALL INDUSTRIES MANAGERS BY CATEGORY, AUSTRALIA, 2006 AND 2021

Industry	Category percentage distribution			
	CEO/GM & M (nfd)	Specialist	Service	All
Hospitals				
2021	12.7	76.4	10.9	100.0
2006	13.2	69.6	17.2	100.0
Med & other				
2021	19.9	65.0	15.1	100.0
2006	21.1	62.7	16.2	10.00
Health services				
2021	16.3	70.7	13.0	100.0
2006	16.6	66.6	16.8	100.0
All industries				
2021	13.1	57.5	29.4	100.0
2006	13.2	50.3	36.5	100.0
Difference 2021-2006				
Hospitals	-0.5	+6.8	-6.3	
Med & other	-1.2	+2.3	-1.1	
Health services	-0.3	+4.1	-3.8	
All Industries	-0.1	+7.2	-7.1	

Note: (CEO/GM & M (nfd) represent the sum of chief executive officer/general manger category with managers no further defined. Health services is the sum of hospital and medical and other health services. (Med & Other) is Medical and other health services.

Sources: References [10] [11]. Analysis made by the authors.

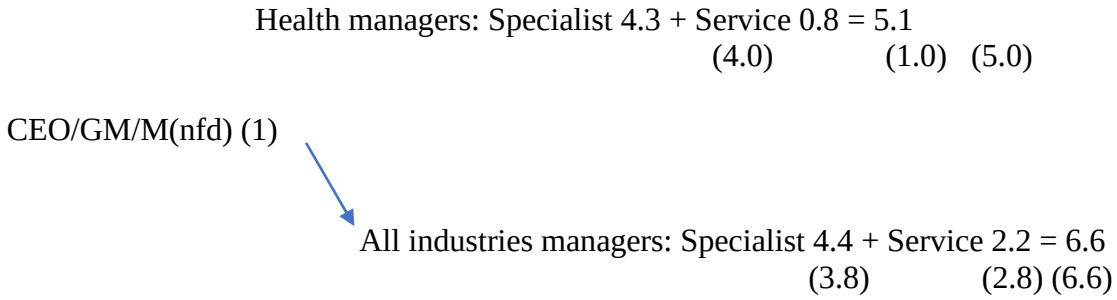
In the same year, managers concerned with services such as cleaning and food constituted 13.0% of health service managers. Their proportion in hospitals was much lower (10.9%) than in medical and other health services (15.1%), but the proportions in both types of services was considerably lower than the average for all industries (29.4%). No doubt, these substantial differences may reflect the contracting out of services by hospitals and other health services to providers of such services.

There were some noticeable changes since 2006 in management categories, not only in health services but also in all industries. The most noticeable was the rise in the proportion of specialist managers. This might have arisen from a concern with middle management more directly involved in the oversight of operations. Accordingly, their proportion rose by 6.8% in hospitals and to a lesser extent by 2.3% in other health services during the 15-year period. While the proportion concerned with service provision that might be outsourced declined by 6.3% in hospitals and 1.1% in medical and other health services. The proportion of

chief executive officers and managers no further defined remained about the same in hospitals (-0.5%) and declined slightly in medical and other health services (-1.2%). The more substantial changes in proportions in hospitals were in line with those in all industries (Table 4).

In spite of the large increase in the number of managers, the structure in the numerical relationship between top and middle management changed only slightly from 2006 to 2021. Thus, top health service managers were responsible for 5.1 middle managers in 2021 and 5.0 in 2006, but with a bigger trade-off between specialist and service managers, as indicated earlier, as the proportion of specialist managers rose while that of service managers declined. This was similar to the change in all industries (Figure 1).

FIGURE 1. AVERAGE SPECIALIST AND SERVICES MANAGERS PER CHIEF EXECUTIVE OFFICER, HEALTH SERVICES AND ALL INDUSTRIES, AUSTRALIA, 2021 AND 2006



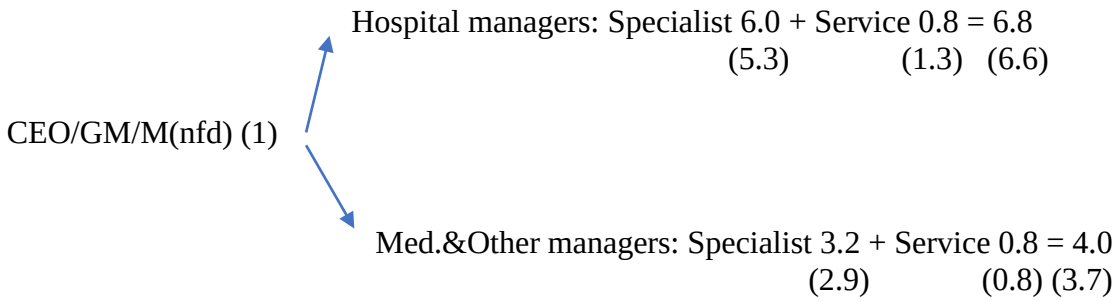
Note: (CEO/GM/M(nfd) is the combined categories of chief executive officer/ general manager/manager no further defined. The figures in brackets are the related ratios for 2006.

Sources: References [10] [11]. Analysis made by the authors.

However, the data for health services mask major differences in structure partly due to the scale of operations between hospitals and medical and other health services.

Accordingly, the changes in hospitals were more considerable in the case of specialist managers employed in hospitals that rose from 5.3 per top manager in 2006 to 6.0 in 2021, but also in the case of service managers that dropped from 1.3 per top manager to 0.8 in 2021. The change in related ratios were relatively small by comparison in the case of medical and other health services (Figure 2).

FIGURE 2. AVERAGE SPECIALIST AND SERVICES MANAGERS PER CHIEF EXECUTIVE OFFICER, HOSPITAL AND MEDICAL AND OTHER HEALTH SERVICES, AUSTRALIA, 2021 AND 2006



Note: (CEO/GM/M(nfd) is the combined categories of chief executive officer/ general manager/manager no further defined. (Med.&Other) is Medical and other health services. The figures in brackets are the related ratios for 2006).

Sources: References [10] [11]. Analysis made by the authors.

AGING MANAGERS

The average age of health managers at 47.3 years was higher than the average for managers in all industries, in 2021. This was particularly so in the case of hospital managers with an average age of 48.9 years compared with that of medical and other health services that at 45.8 years, that was close to the average for all industries. It is noticeable that the spread of age years of the older hospital mangers was lower than in the average for all industries and also that in medical and other health services (Table 5).

The average age of hospital managers rose by almost two years (+1.8 years) in the period 2006-2021. This was about the same increase as that in the younger aged managers in all industries (+1.8), but higher than the increment in the age of managers in medical and health services (+1.1 years) (Table 5).

TABLE 5. AGE OF MANAGERS IN HEALTH SERVICES AND ALL INDUSTRIES, AUSTRALIA, 2006 AND 2021.

Age (years)	Hospitals	Medical & other	All health services	All industries
2021				
Average	48.9	45.8	47.3	45.3
Median	49.3	45.5	47.4	45.0
Standard deviation	*10.7*	*11.5*	*11.2*	*12.1*
Coef. of variation	*0.22*	*0.25*	0.24	*0.27*
2006				
Average	47.0	44.7	46.0	43.5
Median	47.6	45.2	46.6	43.5
Standard deviation	*9.4*	*10.6*	*10.0*	*11.6*
Coef. of variation	*0.20*	*0.24*	*0.22*	*0.27*

Sources: References [10] [11]. Analysis made by the authors.

TABLE 6. AGE OF MANAGERS BY CATEGORY, HEALTH SERVICES AND ALL INDUSTRIES, AUSTRALIA, 2006 AND 2021

Manager category	Health services age (years)				All industries age (years)			
	Average	Median	*SD*	*CV*	Average	Median	*SD*	*CV*
2021								
CEO/GM	50.0	50.1	*11.3*	*0.23*	49.9	49.7	*11.3*	*0.23*
M(nfd)	48.3	47.9	*11.2*	*0.23*	47.9	47.4	*12.2*	*0.26*
Specialist	47.1	47.2	*10.9*	*0.23*	45.3	44.9	*11.3*	*0.25*
Service	45.8	46.0	*12.4*	*0.27*	43.4	42.7	*13.3*	*0.31*
All	47.5	47.4	*11.2*	*0.24*	45.3	45.0	*12.1*	*0.27*
2006								
CEO/GM	47.8	48.1	9.3	*0.19*	47.4	47.2	*10.6*	*0.22*
M(nfd)	47.4	47.4	*10.3*	*0.22*	47.2	47.1	*11.7*	*0.25*
Specialist	45.7	46.3	9.7	*0.21*	43.5	43.4	*10.8*	*0.25*
Service	45.4	46.6	*11.0*	*0.24*	41.9	41.9	*12.5*	*0.30*
All	46.0	46.6	*10.0*	*0.22*	43.5	43.5	*11.6*	*0.27*

Note: (CEO/GM) means chief executive officer and general manager; M(nfd) means managers no further defined; (SD) means standard deviation; (CV) means coefficient of variation.

Sources: References [10] [11]. Analysis made by the authors.

The average age of the top executives (CEO/GM: chief executive officers and general managers) in health services (50.0 years) was about 2.5 years higher than that of the average for all health service managers in 2021, and about the same as that in all industries (49.9 years). However, the average age of the more numerous specialist and service managers was older than that in all industries, leading to a difference of 2.2 years between the average age of managers in health services and all industries. It is noticeable that the average age of service managers in health services (45.8 years) was lower than the average for managers (47.5). This also applied in the case of the younger managers in all industries. However, the age range was wider, as indicated by their higher age standard deviation (Table 6).

The estimation of the average age of managers for 2006 and 2021 indicates that the age of managers both in health services and all industries rose during the 15-year period. The rise in average age was highest in the case of top managers in health services (+2.2 years) and specialist managers (+1.4 years). This was similar to the increase in the average age of these two groups in all industries. This shows a common trend towards older average age for managers in Australian health services, and a wider age range as shown in the estimated age standard deviations for 2006 and 2021 (Table 6).

TABLE 7. AGE OF MANAGERS BY CATEGORY, HOSPITALS AND MEDICAL AND OTHER HEALTH SERVICES, AUSTRALIA, 2006 AND 2021

Manager category	Hospitals age (years)				Medical and other health services age (years)			
	Average	Median	*SD*	*CV*	Average	Median	*SD*	*CV*
2021								
CEO/GM	51.6	52.1	*11.4*	*0.22*	49.0	48.9	*11.2*	*0.23*
M(nfd)	49.2	49.3	*10.1*	*0.21*	47.7	46.9	*11.8*	*0.25*
Specialist	48.4	48.7	*10.5*	*0.22*	45.6	45.2	*11.3*	*0.25*
Service	49.8	51.0	*11.8*	*0.24*	43.0	42.2	*12.0*	*0.28*
All	48.9	49.1	*10.7*	*0.22*	45.8	45.5	*11.5*	*0.25*
2006								
CEO/GM	48.6	48.8	*8.9*	*0.18*	47.1	47.3	9.6	*0.20*
M(nfd)	47.2	47.4	*9.4*	*0.20*	47.4	47.4	*10.7*	*0.23*
Specialist	46.5	47.0	*9.2*	*0.20*	44.6	45.2	*10.4*	*0.23*
Service	48.1	49.2	*9.9*	*0.21*	41.7	41.7	*11.4*	*0.27*
All	47.0	47.6	*9.4*	*0.20*	44.7	45.2	*10.6*	*0.23*

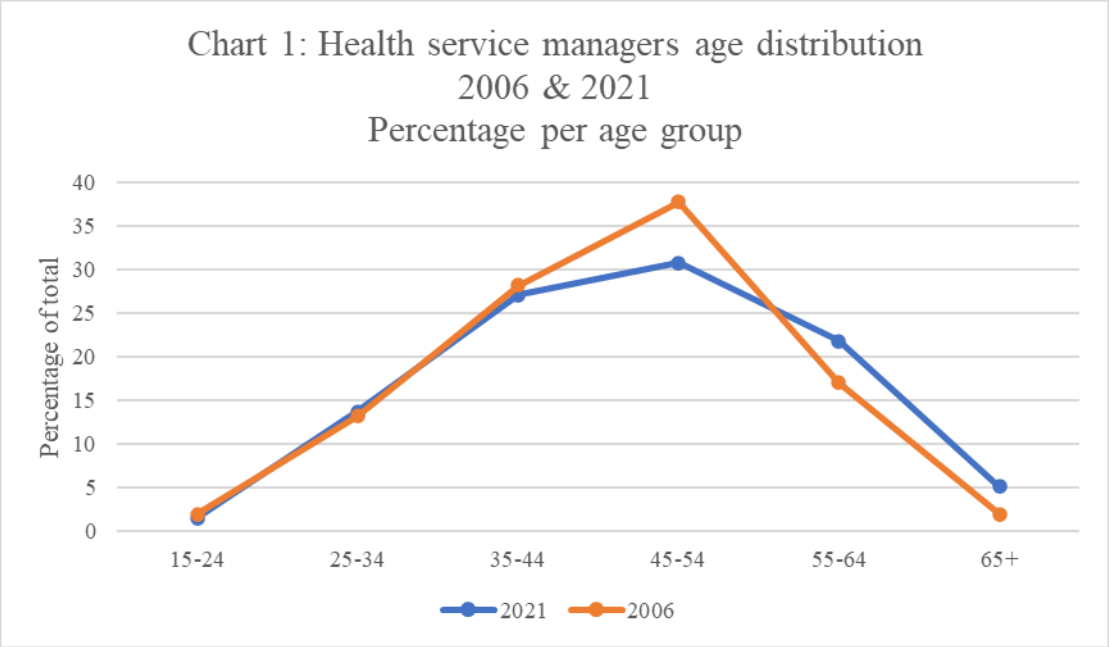
Note: (CEO/GM) means chief executive officer and general manager; M(nfd) means managers no further defined; (SD) means standard deviation; (CV) means coefficient of variation.

Sources: References [10] [11]. Analysis made by the authors.

Further analysis of managers age within health services indicates substantial differences between those in hospitals and medical and other health services. Hospital managers in all categories were older on average than those in medical and other health services, both in 2006 and 2021. Although the average age of all categories rose in both hospitals and medical and other health services, the age of the older CEO/GM in hospitals rose by 3.0 years in hospitals and much less by 1.9 years in medical and other health services. Similarly, while the average age of the larger group of specialist managers in hospitals increased by 1.9 years, that in medical and other health services rose only by 1.0 year. Thus, although average age of managers in all categories and health services increased during the period under review, that in hospitals rose more, especially in the case of top and specialist managers. Another feature of the changes that took place is that the dispersion of ages became larger in 2021 than 2006 for all categories, both in hospitals and medical and other health services. This might

be due to managers staying longer at work before retirement (Table 7; Chart 1).

CHART 1: HEALTH SERVICE MANAGERS AGE DISTRIBUTION 2006 & 2021PERCENTAGE PER AGE GROUP



Sources: References [10] [11]. Analysis made by the authors.

FEMALE AND MALE MANAGERS

Females constituted 76.1% of all employees in health services in 2021 compared with 48.5% in all industries. The proportion was higher in hospitals (77.3%) than in medical and other health services (74.7%). This represented a small increase in the proportion of male employees in both health services, while the inverse happened for all industries (Table 8).

In a service where most employees are females, they also constituted the majority of managers (63.6%) in contrast with the proportion in all industries (40.7%) where the majority of employees were male in 2021. Nevertheless, the proportion of female health managers was considerably lower than the proportion of female employees (76.1%), leaving a considerable gap of 12.5%. The gap was larger in the case of medical and other health services (13.0%) than in hospitals (11.7%) and has been reduced since 2006 (Table 9).

TABLE 8. SEX DISTRIBUTION OF PEOPLE EMPLOYED IN HEALTH SERVICES AND ALL INDUSTRIES, AUSTRALIA, 2006 AND 2021

Sex	Percentages			
	Hospitals	Medical & other	All health	All industries
2021				
Females	77.3	74.7	76.1	48.5
Males	22.7	25.3	23.9	51.5
2021				
Relative difference index	*28.8*	*26.2*	*27.6*	*Standard*
2006				
Females	79.1	72.8	76.2	46.1
Males	20.9	27.2	23.8	53.9
2006				
Relative difference index	*33.3*	*26.9*	*30.3*	*Standard*

Note: The relative difference index=[∑|{ai/bi)*100}-100|}/(2*n); where (ai) is the proportion of employees of sex (i) in given health services; (bi) is the proportion of employees of sex (i) in all industries; (n) is the number of sex groups.

Sources: References [10][11]. Analysis made by the authors.

TABLE 9. SEX DISTRIBUTION OF MANAGERS IN HEALTH SERVICES AND ALL INDUSTRIES, AUSTRALIA, 2006 AND 2021

Sex	Percentage			
	Hospitals	Medical & other	All health	All industries
2021				
Females	65.6	61.7	63.6	40.7
Males	34.4	38.3	36.4	59.3
2021				
Female managers to employees % gap	*-11.7*	*-13.0*	*12.5*	*-7.8*
2006				
Females	61.5	58.8	60.4	35.2
Males	38.5	41.2	39.6	64.8
2006				
Female managers to employees % gap	*-17.6*	*-14.0*	*-15.8*	*-10.9*

Note: The female to employee % gap is the difference between the proportion of female employees and the proportion of managers in the given activity.
Sources References 10 [11]; Table 8. Analysis made by the authors.

The lower proportion of female managers than the proportion of female employees is particularly noticeable in the case of top executives (CEO/GM). Females made up 55.6% of top executives (CEO/GM) in contrast with the average of 63.6% for all manager categories in 2021. Nevertheless, the proportions in 2021 represent an increase from those in 2006 (Table 10).

As stated earlier, health manager ages have grown older from 2006 to 2021. This applied on average for female and male health managers. However, female managers in all categories were younger (46.9 years) than male managers (48.1 years) in 2021. In a similar pattern as that in 2006 (Table 11).

TABLE 10. HEALTH SERVICE MANAGERS BY CATEGORY AND SEX, AUSTRALIA, 2006 AND 2021

Sex	Percentage				
	CEO/GM	M(nfd)	Specialist	Service	All health
2021					
Females	55.6	60.3	65.9	59.8	63.6
Males	44.4	39.7	34.1	40.2	36.4
2006					
Females	51.6	61.0	62.6	57.4	60.4
Males	48.4	39.6	37.4	42.6	39.6
Female					
% change 2006-2021	*+5.0*	*-0.7*	+3.3	+2.4	+3.2

Note: (CEO/GM) are chief executive officers and general managers; (M(nfd)) are managers no further defined.
Sources: References [10] [111]Analysis made by the authors.

TABLE 11. HEALTH SERVICE MANAGERS AVERAGE AGE BY CATEGORY AND SEX, AUSTRALIA, 2006 AND 2021

Sex	Average years of age				
	CEO/GM	M(nfd)	Specialist	Service	All health
2021					
Females	49.5	47.6	46.8	44.5	46.9
Males	50.6	49.3	47.5	47.7	48.1
Persons 2021	50.0	48.3	47.1	45.8	47.5
2006					
Females	47.6	46.7	45.2	45.1	45.5
Males	48.1	48.3	46.5	45.8	46.7
Persons 2006	47.8	47.4	45.7	45.6	46.0
2006-2021 Persons' age years difference	*+2.2*	*+0.9*	*+1.6*	*=0.2*	*+1.3*

Note: (CEO/GM) are chief executive officers and general managers; (M(nfd)) are managers no further defined.
Sources: References [10] [11]. Analysis made by the authors.

GROWING SEX DIFFERENCES IN THE FIELD OF STUDY

The fields of study of health service managers has been predominantly those of health and management/commerce, with a slight change from 2006 to 2021. While in 2006 health studies made up 28.9% and management/commerce 26.2%, by 2021 29.2% were from management/commerce and 28.4% health. As might be expected, while the proportion of management/commerce graduates in health services was about the same as that in all industries (28.6%) in 2021, the proportion of health study graduates was much higher than that in all industries (3.7%). With the exception of social and related studies which graduates made 12.1% of the total in 2021 and 9.5% in 2006, the reminder was distributed among a wide range of disciplines, both in 2021 and 2006 (Table 12).

There was a degree of field of study specialisation between female and male health service managers. Even though the proportion of female managers rose in all fields of study, with the exception of information technology during the period 2006-2021. Accordingly, female managers were predominant in the fields of education, social and related fields, health, food and hospitality, management/commerce and natural and physical sciences, while the proportion of male managers was greater in the case of engineering, architecture/building and information technology studies (Table 13).

TABLE 12. FIELD OF STUDY OF HEALTH SERVICES AND ALL INDUSTRIES MANAGERS, AUSTRALIA, 2006 AND 2021.

Field of study	Percentage			
	2006		2021	
	Health	All industries	Health	All industries
Management & commerce	26.2	20.5	29.2	28.6
Health	28.9	2.5	28.4	3.7
Social & related fields	9.5	8.0	12.7	12.1
Natural & physical sciences	5.1	2.5	5.5	3.0
Engineering	4.1	12.7	3.6	11.2
Education	2.9	4.2	2.4	4.2

Food & hospitality	1.9	2.8	1.7	3.3
Information technology	1.6	2.2	2.8	4.0
Architecture & building	1.0	5.3	1.0	5.5
Other & not well defined	18.8	39.3	12.7	24.4
All fields of study	100.0	100.0	100.0	100.0

Sources: References [10[11]. Analysis made by the authors

TABLE 13. FIELD OF STUDY OF HEALTH SERVICES MANAGERS BY SEX, AUSTRALIA, 2006 AND 2021

Field of study	Percentage			
	2006		2021	
	Females	Males	Females	Males
Education	73.1	26.9	75.8	24.2
Social & related fields	67.2	32.8	73.3	26.7
Health	69.9	30.1	71.3	28.7
Food & hospitality	55.7	44.3	65.0	35.0
Management & commerce	56.3	43.7	61.8	38.2
Natural & physical sciences	52.3	47.7	61.0	39.0
Engineering	7.6	92.4	15.5	84.5
Architecture & building	2.2	97.8	19.7	80.3
Information technology	29.5	70.5	24.5	75.5
Other	65.4	34.6	65.8	34.2
All fields of study	60.4	39.6	63.6	36.4

Sources References [10] [11]. Analysis made by the authors

ASCENDING LEVEL OF EDUCATION OF MANAGERS

There was a substantial rise in the level of educational of managers between 2006 and 2021. This applied across the board in both hospitals and medical and other health services. It was particularly accentuated in terms of postgraduate education that rose to 38.1% from 29.9% in the case of hospitals from 2006 to 2021. Advancement was also high in the case of medical and other health services from 20.7% in 2006 to 27.2% in 2021. This was associated with the substantial rise in the proportion of managers in all industries at postgraduate level from a relatively low of 9.6% in 2006 to 17.4% in 2021. The increase in proportion of managers in health services at bachelor level was relatively small by comparison, with an 4.0 % rise in the case of medical and other health services and an actual small drop of 0.5% in the case of hospitals. However, the growth in proportion of managers in all industries at bachelor level was again much greater from 19.9% in 2005 to 28.5% in 2021. This meant that in spite of the larger proportional rise in the case of managers in all industries, the difference between the level of education between them and those in health, and especially those in hospitals, remained quite large (Table 14).

TABLE 14. LEVEL OF EDUCATION OF HEALTH SERVICES AND ALL INDUSTRIES MANAGERS, AUSTRALIA, 2006 AND 2021

Level of education	Percentage of all levels			
	Hospitals	Medical & other	All health	All industries
2021				
Postgraduate	38.1	27.2	32.6	17.4

Bachelor	29.6	35.2	32.4	28.5
	67.7	62.4	65.0	45.9
Diploma/certificate	21.6	24.7	23.2	31.9
Other & not stated	10.7	12.9	11.8	22.2
All	100.0	100.0	100.0	100.0
2021 Relative difference index	*25.9*	*18.0*	*21.9*	*Standard*
2006				
Postgraduate	29.9	20.7	25.8	9.6
Bachelor	29.1	31.2	30.0	19.9
	59.0	51.9	55.8	29.5
Diploma/certificate	22.0	26.8	24.2	31.5
Other & not stated	19.0	21.3	20.0	39.0
All	100.0	100.0	100.0	100.0
2006 Relative Difference index	*42.4*	*29.1*	*36.5*	*Standard*

Note: The relative difference index=[∑|{ai/bi)*100}-100|}/(2*n); where (ai) is the proportion of managers with level of education (i) in given health service; (bi) is the proportion of managers (i) in all industries; (n) is the number of levels of education groups. Other and not stated includes those who did not state their level of education or with other than the stated levels of education.

Sources: References [10] [11]. Analysis made by the authors.

An outcome is that the proportion of managers at diploma/certificate level in health services remained lower (23.2% in 2021) than that in all industries (31.9% in 2021), especially so in the case of hospitals (21.6% in 2021) (Table 14).

The level of education of chief executive officers and general managers (CEO/GM) was considerably higher than for the other levels of management in 2021. In the case of hospitals 46.1% had postgraduate qualifications and 37.5% in medical and other health services. Specialist managers both in hospitals (41.4%) and medical and other services (29.5%) followed. In both cases, they also had high proportions at bachelor level, that made their proportions at graduate levels at respectively 76.7% and 73.2% in the case of hospitals and 73.1% and 66.9% in medical and other health services. It is noticeable that managers in both hospitals and medical and health services concerned with service functions had only 23.9% and 33.3% of their total numbers at graduate level, with respectively 48.1% and 41.7% at diploma/certificate levels. While the education at graduate level of managers no further defined was 60.3% and 59.9% respectively at hospitals and medical and other health services (Table 15).

TABLE 15. LEVEL OF EDUCATION OF MANAGERS IN HOSPITALS AND MEDICAL AND OTHER HEALTH SERVICES BY CATEGORY, AUSTRALIA, 2021

Level of education	Percentage of all levels of education				
	CEO/GM	M(nfd)	Specialist	Service	All
Hospitals					
Postgraduate	46.1	35.2	41.4	8.8	38.1
Bachelor	30.6	25.1	31.8	15.1	29.6
	76.7	60.3	73.2	23.9	67.7
Diploma/certificate	16.1	24.0	18.4	48.1	21.6

Other & not stated	7.2	15.7	8.4	28.0	10.7
All	100.0	100.0	100.0	100.0	100.0
Medical & other health services					
Postgraduate	37.5	25.8	29.0	9.7	27.2
Bachelor	35.6	34.1	37.9	23.3	35.2
	73.1	59.9	66.9	33.0	62.4
Diploma/certificate	17.7	25.5	22.3	41.7	24.7
Other & not stated	9.2	14.6	10.8	25.3	12.9
All	100.0	100.0	100.0	100.0	100.0

Note: (CEO/GM) are chief executive officers and general managers; (M(ndf) are manages no defined. (Other & not stated) include those managers who did not state their level of education or with other than the levels of education stated in the table.

Source: Reference [11]. Analysis made by the authors.

The proportion of male CEOs/GMs at postgraduate and graduate levels (79.1%) was higher than that of females (70.8%) in health services in 2021. However, close to the reverse happened in the case of specialist managers where the proportion was 70.7% for females and 69.6% for males. Males also had a higher proportion of postgraduate qualification in the case of managers no further defined and service managers, but the proportion of graduates was about the same for both sexes, with a higher proportion of males with diploma/certificate in the service manager category (Table 16).

LAGGING GROWTH IN INCOME

The average income of health managers was substantially higher than that in all industries both in 2021 and 2006. This was especially so in the case of hospitals that in 2021 was $2,385 per week (about $124,300 per year) in comparison with average in all industries of $2,154 (about $112,200 per year) in all industries. The difference was lower in the case of managers in medical and other health services with an average weekly income $2,221 (about $115,700 per year). It is noticeable that dispersion in the range of income of hospital managers was lower than that in either medical and other health services or that for managers in all industries.

Further, the proportional average increase in managers of health services (+53.6%) was considerably lower than that of lower paid average managers for all industries (+60.6%) in the period 2006-2021. Thus, reducing, the difference between the average income of managers in health services and the average for all industries. (Table 17).

TABLE 16. LEVEL OF EDUCATION OF MANAGERS OF HEALTH SERVICES, BY SEX AND CATEGORY, AUSTRALIA, 2021

Level of education	Female and male percentage in level by category				
	CEO/GM	M(nfd)	Specialist	Service	All
Females					
Postgraduate	39.2	28.6	36.2	8.3	32.8
Bachelor	31.6	29.3	34.5	20.4	32.2
	70.8	57.9	70.7	28.7	65.0
Diploma/certificate	20.0	24.2	19.9	40.3	22.6
Other & not stated	9.2	17.9	9.4	31.0	12.4
All	100.0	100.0	100.0	100.0	100.0

Males					
Postgraduate	42.9	30.9	34.7	10.8	32.3
Bachelor	36.2	32.6	34.9	19.1	32.7
	79.1	63.5	69.6	29.9	65.0
Diploma/certificate	13.4	25.9	20.7	50.3	24.1
Other & not stated	7.5	10.6	9.7	19.8	10.9
All	100.0	100.0	100.0	100.0	100.0

Note: (CEO/GM) are chief executive officers and general managers; (M(ndf) are manages no further defined. (Other & not stated) include those managers who did not state their level of education or with other than the levels of education stated in the table.

Source: Reference [11]. Analysis made by the authors

TABLE 17. AVERAGE WEEKLY INCOME OF MANAGERS IN HEALTH SERVICES AND ALL INDUSTRIES, AUSTRALIA, 2006 AND 2021

	Weekly income ($)			
Weekly income	Hospitals	Medical & other	All health	All industries
2021				
Average	2,385	2,221	2,303	2,154
Median	2,303	1,993	2,177	1,892
Standard deviation	*954*	*1.111*	*1,039*	*1,167*
Coefficient of variation	*0.40*	*0.50*	*0.45*	*0.54*
2006				
Average	1,548	1,436	1,499	1,341
Median	1,411	1,261	1,362	1,108
Standard deviation	*769*	*827*	*799*	*882*
Coefficient of variation	*0.50*	*0.58*	*0.53*	*0.66*
2021-2006				
% change of average	*+54.1*	*+54.7*	*+53.6*	*+60.6*

Note: The average and median are for the weekly gross income of managers. The figures exclude those managers that did not declare their income at the time of the censuses that constituted about 0.3% of health managers and 0.6% of managers in all industries. The change in the relative weights of hospital and medical and other health services between 2006 and 2021 has led to the lower % change in averages between 2006 and 2021 for all health managers.

Sources: References [10] [11]. Analysis made by the authors.

As might be expected, managers at chief executive/general manager level in health services earned about a fifth more on average (+23.8%) than the average for all managers in those services, but the difference was lower than that in all industries. Specialist managers earned about as much as the average and service managers considerably less than the average (-31.4%). This trend tended to be followed both in hospitals and medical and other health services (Table 18).

The average weekly income of females in health services at $2,316 in 2021 was lower than that of males of $2,583 in 2021. The difference between them prevailed across their age and became larger above 64 years of age (Chart 2).

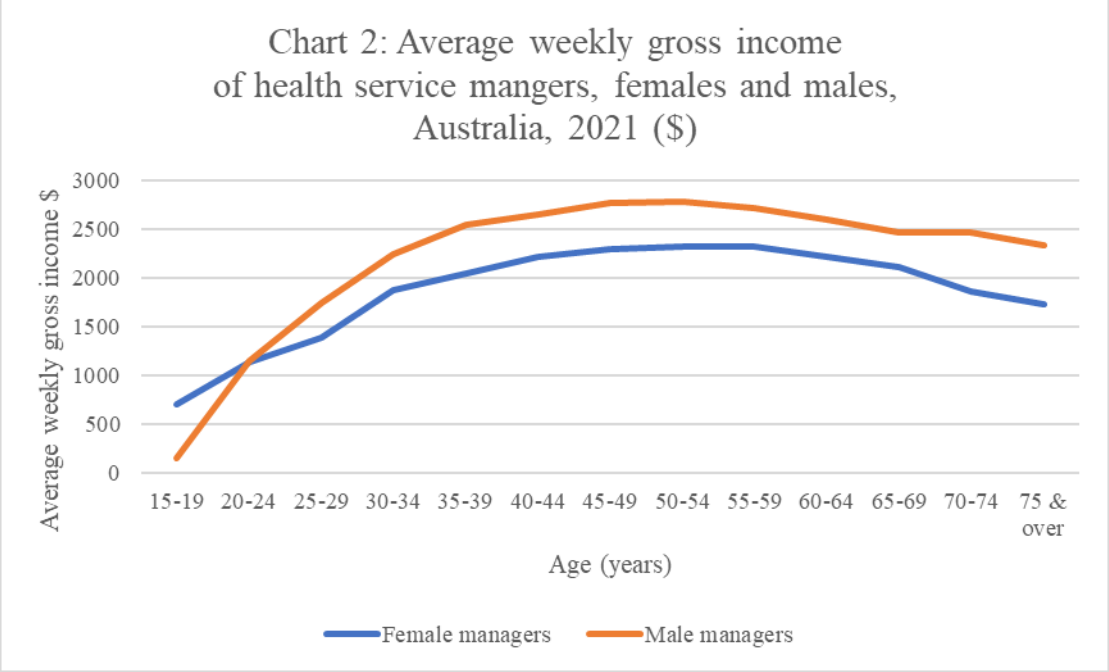
TABLE 18. AVERAGE WEEKLY INCOME OF MANAGERS IN HEALTH SERVICES AND ALL INDUSTRIES, BY CATEGORY, AUSTRALIA, 2021

Category	Percentage above (+) or below (-) average weekly income			
	Hospitals	Medical & other	All health	All industries
CEO/GM	+20.5	+27.6	+23.8	+32.5
M(nfd)	-1.3	-5.4	-4.7	+2.3
Specialist	+2.1	+0.9	+1.9	-11.4
Service	-32.2	-29.9	-31.4	-33.1
All mangers				
Average weekly income ($)	*2,385*	*2,221*	*2,303*	*2,154*

Note: The average and median are for the weekly gross income of managers. The figures exclude those managers that did not declare their income at the time of the censuses that constituted about 0.3% of health managers and 0.6% of managers in all industries.

Source: Reference [11]. Analysis made by the authors.

CHART 2: AVERAGE WEEKLY GROSS INCOME OF HEALTH SERVICE MANGERS, FEMALES AND MALES,AUSTRALIA, 2021 ($)



Source: Reference [11]. Analysis made by the authors

HOURS WORKED BY MANAGERS

The hours of work of managers in hospitals at an average of 41.9 in 2021 remained the same as in 2006, while the average of those in medical and other health services declined a little from 41.9 in 2006 to 40.4 in 2021. This was a small change in comparison with that of the average for all industries that fell by 4.1 hours to the still higher average of 42.8 hours in 2021. The standard deviations from the average indicate that there was a wider range around the average in both medical and other health services and all industries than in hospitals in 2021 (Table 19).

Chief executive officers/general managers worked longer average hours in health services (45.6 hours) than those in other positions, especially those in service areas (37.7 hours) in 2021. Nevertheless, the top executive average in health services was somewhat lower than the average for all industries (48.3 hours). In general, the averages for other levels of management in medical and other health services tended to be lower than those in hospitals (Table 20).

On average, in 2021, female managers tended to work a lower number of hours both in hospitals (40.2 hours) and medical and other health services (38.3 hours) than males (respectively 43.9 and 43.9 hours) (Table 21).

TABLE 19. AVERAGE HOURS WORKED THE WEEK BEFORE THE CENSUS BY MANAGERS IN HEALTH SERVICES AND ALL INDUSTRIES, AUSTRALIA, 2006 AND 2021

Weekly work hours	Hours worked per week			
	Hospitals	Medical & other	All health	All industries
2021				
Average	41.9	40.4	41.1	42.8
Median	40.3	40.1	40.2	40.4
Standard deviation	*16.5*	*17.3*	*16.9*	*18.3*
Coefficient of variation	*0.39*	*0.43*	*0.41*	*0.43*
2006				
Average	41.9	41.9	41.9	46.9
Median	39.7	39.8	39.7	43.6
Standard deviation	*17.2*	*18.5*	*17.8*	*19.6*
Coefficient of variation	*0.41*	0.44	*0.42*	*0.42*
2021-2006 change of hours average	*Nil*	*-1.5*	*-0.8*	*-4.1*

Note: The figures exclude 0.4% of health managers in hospitals and medical and other health services who did not state their hours of work and 0.7% of managers in all industries.

Sources: References [10] [11]. Analysis made by the authors.

TABLE 20. AVERAGE HOURS WORKED THE WEEK BEFORE THE CENSUS BY MANAGERS IN HEALTH SERVICES AND ALL INDUSTRIES, BY CATEGORY, AUSTRALIA, 2021

Category	Average hours worked per week			
	Hospitals	Medical & other	All health	All industries
CEO/GM	45.7	45.6	45.6	48.3
M(nfd)	41.8	37.7	39.3	42.4
Specialist	42.0	40.6	41.4	44.2
Service	37.7	35.2	36.2	38.3
All managers	41.9	40.4	41.1	42.8

The figures exclude 0.4% of health managers in hospitals and medical and other health services who did not state their hours of work and 0.7% of managers in all industries.

Source: Reference [11]. Analysis made by the authors.

TABLE 21. AVERAGE HOURS WORKED THE WEEK BEFORE THE CENSUS BY MANAGERS IN HOSPITALS AND MEDICAL AND OTHER HEALTH SERVICES BY SEX, AUSTRALIA, 2021.

Weekly work hours	Hours worked per week			
	Hospitals		Medical & other	
	Females	Males	Females	Males
Average	40.2	43.9	38.3	43.6
Median	40.2	40.5	39.8	40.5
Standard deviation	16.9	15.6	16.8	17.7
Coefficient of variation	0.43	0.36	0.44	0.41

The figures exclude 0.3% of hospitals and 0.4% in medical and other health services who did not state their hours of work.

Source: Reference [11]. Analysis made by the authors.

This difference is partly due to the much larger proportion of female managers both in hospitals (24.5%) and medical and other health services (30.2%) who worked less than 35 hours per week in comparison with males (10.7% and 16.6% respectively). This represents a proportional increase in comparison with 2006 (Table 22).

However, most managers worked 35 hours or more in 2021: 80.3% in hospitals and 74.6% in medical and other health services in 2021. As was the case in 2006. Accordingly, in 2021, full-time managers in hospitals worked on average 47.3 hours per week and those in medical and other health services 47.4 hours. Following the pattern, full-time female managers in medical and other health services worked on average a lower number of hours (46.2 hours) compared with full-time male managers (49.0 hours), but the averages in hospitals was about the same (males 47.5 and females 47.1 hours) (Table 23).

The established pattern of female and male managers practice regarding average hours of work is apparent when the hours of work above 49 hours and those below 16 hours is examined. In 2021, males constituted 22.9% of health managers who worked 49 hours or more per week and females 16.7%. Of those who worked 15 hours or less per week, females made up 8.8% and males 6.5% (Table 24).

TABLE 22. MANAGERS WORKING LESS THAN 35 HOURS THE WEEK BEFORE THE CENSUS, HEALTH SERVICES AND ALL INDUSTRIES BY SEX, AUSTRALIA, 2006 AND 2021

Sex	% managers working less than 35 hours per week			
	Hospitals	Medical & other	All health	all industries
2021				
Females	24.5	30.2	27.3	29.5
Males	10.7	16.6	14.3	15.2
2021 All managers	19.7	25.4	22.6	21.0
2006				
Females	21.3	28.5	24.4	24.8
Males	9.0	12.0	10.3	9.7
2006 All managers	16.5	21.7	18.9	15.0

Note: The figures exclude 0.4% of health managers in hospitals and medical and other health services who did not state their hours of work and 0.7% of managers in all industries.

Sources: References [10]11]. Analysis made by the authors

TABLE 23. AVERAGE HOURS WORKED THE WEEK BEFORE THE CENSUS BY FULL-TIME MANAGERS IN HEALTH SERVICES AND ALL INDUSTRIES, BY SEX, AUSTRALIA, 2021

Sex	Average hours worked per week			
	Hospitals	Medical & other	All health	All industries
Female	47.1	46.2	46.9	47.1
Male	47.5	49.0	48.1	50.6
All managers	47.3	47.4	47.4	49.3

Note: The figures exclude 0.3% of hospitals and 0.4% in medical and other health services who did not state their hours of work. Full-time managers are defined as those who work 35 hours or more per week.

Source: Reference [11]. Analysis made by the authors.

TABLE 24. MANAGERS WHO WORKED MORE THAN 48 AND LESS THAN 16 HOURS THE WEEK BEFORE THE CENSUS, HEALTH SERVICES AND ALL INDUSTRIES, BY SEX, AUSTRALIA, 2021

Sex	Hospitals	Medical & other	All health	All industries
	% managers working 49 hours or more per week			
Female	18.6	14.8	16.7	16.7
Male	21.0	24.6	22.9	29.3
All managers	19.4	18.6	19.0	24.4
	% managers working 15 hours or less per week			
Female	7.6	10.0	8.8	11.9
Male	5.2	7.7	6.5	7.0
All managers	6.7	9.1	8.0	9.0

Note: The figures exclude 0.3% of hospitals and 0.4% in medical and other health services who did not state their hours of work.

Source: Reference [11]. Analysis made by the authors.

MARITAL STATUS

The married status of managers in Australia portrayed a tendency to later marriage, or never married status, as the proportion of never married rose from 2005 to 2021. The proportion of managers in health services whose marital status was divorced/separated and widowed remained about the same, but that of never married rose from 17.9% in 2006 to 21.9% in 2021. The change was higher in medical and other health services (+4.5%) than hospitals (+2.7). Nevertheless, the proportion of married managers in health services was larger (63.0%) in 2021 than the average for all industries (61.9%) (Table 25).

TABLE 25. MARITAL STATUS OF HEALTH SERVICE MANAGERS AND ALL INDUSTRIES, AUSTRALIA, 2006 AND 2021

Marital status	Percentage			
	Hospitals	Medical & other	All health	All industries
2021				
Never married	19.6	23.8	21.7	25.7

Married	64.3	61.8	63.0	61.9
Divorced/separated	14.9	13.4	14.2	11.5
Widowed	1.2	1.0	1.1	0.9
All managers 2021	100.0	100.0	100.0	100.0
2006				
Never married	16.9	19.3	17.9	21.9
Married	66.0	66.1	66.2	65.9
Divorced/separated	15.5	13.4	14.5	11.3
Widowed	1.6	1.2	1.4	0.9
All managers 2006	100.0	100.0	100.0	100.0

Note: (Married) includes those in a partnership.
Sources: References [10][11]. Analysis made by the authors.

COUNTRY OF BIRTH

The country of birth of managers changed somewhat between 2006 and 2021. This change reflects to some extent the higher proportion of population and managers born outside Australia between the two censuses. Accordingly, the proportion of health managers born in Australia dropped from 74.3% in 2006 to 69% in 2021. This change is similar to that for all industries. However, the proportion of hospital managers (71.7%) in 2021 showed a smaller change (75.6% in 2006) than that in medical and other services and all industries. Although the proportion in 2021 born in the United Kingdom and Ireland (9.4%) dropped somewhat (11.1%) since 2006, it remained the largest of hose born outside Australia. The major proportional increase since 2006 was in health managers born elsewhere, including China and India, while those born in other European countries fell considerably from 8.4% in 2006 to 2.9% in 2021 (Table 26).

TABLE 26. COUNTRY OF BIRTH OF HEALTH SERVICE MANAGERS AND ALL INDUSTRIES, AUSTRALIA, 2006 AND 2021

	Percentage			
Country of birth	Hospitals	Medical & other	All health	All industries
2021				
Australia	71.7	66.3	69.0	67.6
New Zealand & Oceania	3.5	3.4	3.5	3.5
United Kingdom & Ireland	9.4	8.4	8.9	7.1
Other Europe	2.7	3.2	2.9	3.6
Other	12.7	18.7	15.7	18.2
All managers 2021	100.0	100.0	100.0	100.0
2006				
Australia	75.6	72.5	74.3	73.1
New Zealand & Oceania	2.8	3.2	3.0	3.5
United Kingdom & Ireland	11.1	10.1	10.7	8.4
Other Europe	7.5	9.7	8.4	10.9
Other	3.0	4.5	3.6	4.1
All managers 2006	100.0	100.0	100.0	100.0

Note: The figures do not include 0.3% of health managers who did not state their country of birth and 0.3% of managers in all industries for the same reason.
Sources: References [10] [11]. Analysis made by the authors.

INDIGENOUS STATUS

The proportion of health mangers with indigenous status almost doubled from 1.2% in 2006 to 2.1% in 2021. This rise is similar to that in all industries from 0.6% to 1.3%, over the same period. However, the proportions were substantially higher in the case of health services, especially in medical and other health services: 1.5% in 2006 and 2.5% in 2021. The proportion of female managers in health services who had indigenous status in 2021 was 2.4% compared with that of males 1.6%. This difference between female and male was higher in 2021 than in 2006 (Table 27).

TABLE 27. INDIGENOUS STATUS OF HEALTH SERVICE MANAGERS AND ALL INDUSTRIES, AUSTRALIA, 2006 AND 2021

Sex	Indigenous percentage			
	Hospitals	Medical & other	All health	All industries
2021				
Females	1.9	2.9	2.4	1.6
Males	1.4	1.9	1.6	1.1
All managers 2021	1.8	2.5	2.1	1.3
2006				
Females	1.0	1.5	1.3	0.8
Males	0.8	1.5	1.1	0.5
All managers 2006	1.0	1.5	1.2	0.6

Note: The figures exclude 0.2% of health managers and 0.2% of managers in all industries who did not state their status.
Sources: References [10] [11]. Analysis made by the authors.

DISCUSSION

A major finding from the analysis is the large growth in employees and managers of health services during the 15-years under review. That was accompanied by the growth of 2.0% in GDP expenditure on health services. This has meant that the trends in the growth of health personnel (+78.0%) and managers (+119.4%) surpassed the growth in the population over 65 years of age (51.7%) in that period. This might be associated with the greater intensity of use of services by older people that is more than proportional as age progresses.

It is noticeable that the proportional increase in managers was highest at the middle management specialist level concerned with more direct services to users, both in hospital and medical and other health services. The growth in managers was particularly high in medical and other health services (+150.4%) compared with hospital services (95.1%) during the 15-year period. And the ratio of employees per manager also declined more substantially in medical and other health services (-9.6) than in hospitals (-2.0). This meant that the number of employees per manager in medical and other health services remained lower than that in hospitals, a contributing factor might be the smaller size of health services organisation outside hospitals.

Another important feature of the changes that took place in the 15-year period was the continuing rising average age of health service managers, both in hospitals (+1.9 years) and that of the older medical and other health services (+1.1 years). This reflects the tendency for health service managers to retire at older ages. Although, the average increase in the age of female and male managers was about the same (+1.4 years), that of male chief executive officers/general managers rose substantially more (+2.5 years) than that of females in the same category (+(1.9 years).

The difference between the more numerous female and male health service managers is also apparent in their field of study and level of education. Accordingly, female health managers constituted 60% or more of managers with the study fields of education, social and related fields, health, food and hospitality, management and commerce

and natural and physical sciences, while males made up 75% or more of those in engineering, architecture and building, and information technology. This difference in fields of study prevailed during the 15-year period. A related feature is the level of education of health service managers. The proportion of health managers at graduate level was higher than the average for all industries during the 15-year period and rose to 67.7% in 2021 in the case of hospitals from 59.0% in 2006. The proportional increase was even greater in the case of managers of medical and other health services that rose from 51.9% in 2006 to 62.4% in 2021. Female and male differences prevailed during the 15-year period, even though on average 65.0% both female and male health service managers had graduate level academic qualification both in 2006 and 2021. However, on average 70.8% female chief executive officers/general managers had graduate level of education compared with 79.1% of males in 2021. The difference was relatively small at specialist manager level (70.7% and 69.7% respectively).

Health service managers on average, and associated with their higher level of education, had a higher average income than those in all industries. However, their average income rose by 53.6% from 2006 to 2021 while that of managers in all industries increased on average by 60.6% over the same period. It is a feature of health service that on average female managers earn less than males. Part of this difference arises from the average hours worked by female and male managers, as a larger proportion of female managers worked less than 35 hours per week (27.3%) than male managers (14.3%) in 2021. This difference also prevailed in 2006.

The proportion of health service managers who were married declined somewhat between 2006 (66.0%) and 2021 (64.3%), as the proportion of never married rose (16.9% in 2006 and 19.6% in 2021). This change followed the trend for the average marital status of managers in all industries. Another and more accentuated change was the country of birth of health service managers in the period from 2006 to 2021. Accordingly, the proportion of health managers born in Australia declined from 75.6% in 2006 to 71.7% in 2021, but those born elsewhere than Australia, New Zealand and Oceania and Europe rose from 3.0% in 2006 to 12.7% in 2021. Among them, those born in Asia, including China and India, constituted the largest group. Another aspect of change has been the increasing proportion of health managers of indigenous status that almost doubled from 1.2% in 2006 to 2.1% in 2021. These proportions were much higher in the case of females than those of males in 2021 and also higher than the average for all industries.

Thus, major changes have taken place in the number and characteristics of health service managers from 2006 to 2021. They reflect the evolution of services with a greater emphasis on medical and other health services outside hospitals, but also changes in the middle management of hospitals. Nevertheless, hospitals continue to employ most of the people engaged in the provision of health services. But the number of managers in medical and other health services grew much more and was about the same as that in hospitals in 2021.

One of the significant features of this research is that enables a clearer understanding of the health management labour force in Australia. It also provides a more factual basis for improved labour force planning for present and future managers and leaders, including their career and development paths. Given the nature and complexity of the healthcare sector, any lack of information on those who manage and lead the system can result in detrimental consequences.

LIMITATIONS

This paper provides an analytical insight into the level and characteristics of managers of health services in Australia. This could be considered a major and unique contribution to the assessment of health care services. Nevertheless, it should be stated that this contribution has limitations. By its nature, the analysis is limited by the data provided in the Australian censuses of population for 2006 and the latest in 2021. Further, the analysis is concerned with health managers at national level. Consequently, it cannot deal with differences that are likely to prevail at state and territory level. Thus, it encompasses an important but limited view of the management of health services in Australia, and by implication of the quality and appropriateness of services provided.

CONCLUSION AND AGENDA FOR FUTURE RESEARCH

The contribution made in this paper to the understanding of the changes that have taken place in health service management raises a number of questions that could be the subject of research from different sources than those used in this paper. One of these is the factors that

contributed to the large upsurge in numbers at middle management level. Another is the possible consequences of longer working lives of health service managers. Thus, the limitations of the analysis of this paper should be an encouragement for further research from alternative sources. Further, research might be undertaken on the influence that existing professional boundaries exert on the various categories of health service managers in general and specialist managers in particular.

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APPENDIX

MANAGERS CLASSIFICATION

The classification of managers in this paper is in accordance with ABS's adopted ANZCO: Australian and New Zealand Standard Classification of Occupations. According to it, managers are engaged in the planning, organisation, direction, control, coordination and review of organisations and/or departments. In other words, managers set the overall direction and objectives of organisations and/or their departments to make certain that set objectives are met. They are concerned with the allocation of assets and resources. They direct, control and/or coordinate the activities of organisations and/or their departments, either personally or through subordinates. They are concerned with monitoring and evaluating the overall or departmental performance of the organisation and changing policies and processes to make certain that set objectives are met. They are also engaged in the representation and/or negotiation of the interests of their organisations and/or departments.

Chief executive officers and general managers are engaged and responsible for the planning, organisation, direction, control, coordination and review of the overall operations of organisations, their major activities and representation of and negotiation on behalf of their organisations. Their tasks include the setting of the overall direction and goals of their organisations. They are concerned with the overall setting of the operations of their organisations. In addition, they are responsible for the performance of their organisation in line with set objectives. Further, they represent their organisations in public relations and negotiations with other organisations and regulatory authorities.

Specialist managers have more direct duties in the planning, organisation, control and coordination of given functions within the overall organisational setting, such in the production and distribution of services, the management of human and financial resources and other ancillary functions. Thus, their tasks include development and implementation of strategies concerned with monitoring and ensurance that policies and plans are followed and evaluation of their outcome, in terms of work progress, performance, and adjustment of processes and resources to achieve set goals. They control budget planning and report on performance and control of expenditure in their area of responsibility. They are involved in personnel planning and training and their performance. They may be involved in the representation of their organisation at given levels and also negotiations with other departments and other outside organisations, such as suppliers of good and services.

Hospitality and service managers are concerned with the organisation and operation of accommodation, cleaning, transport and provisions such as food. They are concerned with the selection, training and supervision of related staff [12].

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RESEARCH ARTICLE

EVALUATING THE FACTORS AFFECTING EMPLOYEE RETENTION STRATEGY IN PHARMACEUTICAL COMPANIES

Bhuvaneswari M, R Kavitha*

Department of Commerce, Periyar University, Salem, Tamil Nadu, India.

Correspondence: dharandharsan@gmail.com

ABSTRACT

Employee retention is an emerging concept in branches of Human Resource Management (HRM). The employee retention concept seems to be expensive, and it is not globally adopted by all pharmaceutical companies. These companies need to be aware of the value of efficient employees and their contribution to the economic growth of their companies. The primary aim of management should be employee retention which will enable companies to reap benefits in the long run. As found in various government and association medical representatives' reports, employee attrition rates in pharmaceutical companies are high when compared to various other sectors. This creates high level of mismatch between employee demand and supply for medical representatives.

The objective of the research study is to identify the various factors that are influencing employee retention and also examine the various inter-relationships that exists among those factors. An empirical study was performed to collect data from 128 medical representatives in Salem, Tamilnadu, India through a self-administered questionnaire method. Convenience sampling technique was adopted. The research involved quantitative analysis using the IBM SPSS (version 23) software package and also determined percentage analysis and factor analysis. Structural equation modelling is used to analyse factors such as Monetary Rewards, Work Pressure and Performance and other perquisites which influences employee retention for pharmaceutical companies. The outcome of the study reveals that there exists a high level of inter-relationship amongst these factors which have significant impact on employee retention.

KEYWORDS

employee retention, monetary rewards, pharmaceutical companies, performance, work pressure

1. INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Pharmaceutical companies are playing a vital role in maintaining the public health of people in society. These companies are manufacturing drugs which safeguard LIVES [1]. The production and marketing of medicines is a meticulous task that involves complex processes. Innovation and production are expensive which adds risk implications to these companies. The pharmaceutical companies will be prone to non-recurring expenditure due to the amount of resources invested in the research and DEVELOPMENT [2]. The human population requires medicine either to cure or control disease.

Pharmaceutical companies have huge responsibility in the manufacturing of novel medicines to cure the new forms of diseases that emerges all over the world [3]. Pharmaceutical companies also face many challenges such as competition, generic medicines and non-recoverable costs from failed approaches. These challenges continue until the drugs reach prospective patients. There are several drug substitution products on the

market [4]. The complimentary and substitute goods are higher for medicinal products when compared to the fast-moving consumer goods. These challenges are faced by these companies after huge capital investments in the pharmaceutical sector [5]. Companies also faces the challenges in the marketing of products which are performed by the representatives of the respective organization.

The survival of the medicines into the market is finally in the employees' hands of the organization and these personnel are technically called medical representatives [6]. These people have the responsibility of explaining the usage and benefits of the medicine and in differentiating the specialties from complimentary and substitute drugs. The efforts of medical representatives play a vital role in the marketing of the medicines for appropriate needs [7]. There are various efforts taken by companies and marketers to bring success for the innovated medicines. The efforts of the medical representatives are vital in making the company's medicine to be marketed and available at the required centres [8].

1.2 PROBLEM IDENTIFICATION

The marketing of pharmaceutical products is a tedious task when compared to the other consumer products in the market [9]. The marketing of general consumer products has direct connection with the consumers whereas medical representatives do not have such direct connectivity with patients. This field requires some technical knowledge regarding pharmaceutical products. Conceptual knowledge is required while marketing medicinal products. The medical representatives are subjected to numerous problems in the marketing process. The problems of availability of complementariness will genuinely tax the skills of medical representatives.

Field-oriented problems such as concurrent meeting of doctors, nature of monotonous job, target fulfilment, complete knowledge of medicines has an impact on the psychological level of the medical representatives [10]. The medical representatives are subjected to various psychological pressures in the workplace. These factors are required to be examined from the perception of medical representatives. The problems faced by medical representatives can be resolved through motivation as well as in compensation packages offered by pharmaceutical companies. The actions taken by the pharmaceutical companies in order to retain the employees efficiently will act as a model for other sectors.

1.3 SIGNIFICANCE OF THE STUDY

Various investigators [11] have highlighted the significance of employee retention in the pharmaceutical industries. Pharmaceutical companies play a significant role in the economic growth of the country. The GDP contribution of these companies has elevated to 12% according to the previous financial year [12]. The pharmaceutical sector provides an enormous amount of direct, as well as indirect, employment opportunities. Alternatively, it also reports higher attrition rates due to the challenges encountered by the medical representatives. This will lead to numerous problems in the long run when the companies cannot retain their efficient employees. These companies are also facing tough situations in identifying appropriate personnel for medical representative work. Those efficient employees need to be retained by their companies to achieve a positive growth in the sector among their competitors. The attrition rates of the sector are alarming, and that has to be addressed to minimise impact.

Pharmaceutical companies should motivate employees with appropriate compensation and rewards for employee retention. The process of retaining employees might seem to be expensive when compared to companies those who are not following reward processes. The retention of efficient employees will play a major role in economic growth of companies over a period of time [13]. These companies have to plan accordingly and focus on the attributes of employee retention. Efficient employees are significantly contributing towards the progress of pharmaceutical companies. These companies have to focus on strong retention policies to have reduced attrition rates and enhanced efficient employees. Finally, this research paper examines the various aspects of employee retention that has to be adopted by the pharmaceutical companies.

1.4 RESEARCH OBJECTIVES

The present study focuses on estimating the factors influencing employee retention strategy in pharmaceutical companies in Salem. The main objectives of this study are to:

1. investigate the demographic characteristics of medical representative in Salem, India.
2. analyse the factors affecting the employee retention strategy in pharmaceutical companies of Salem, India.

3. recommend an exclusive model for medical representative retention factor in the pharmaceutical industry.

1.5 RESEARCH HYPOTHESIS

The research hypotheses developed are as follows,

Hypothesis 1

H1: Demographic characteristics have influence on employee retention strategy in pharmaceutical industry.

- H1.0: Demographic characteristic does not have influence on employee retention strategy in pharmaceutical industry.

Hypothesis 2

H2: Monetary reward has significant impact on the employee retention strategy.

- H2.0: Monetary reward does not have significant impact on the employee retention strategy.

Hypothesis 3

H3: Work pressure affect the employee retention strategy.

- H3.0: Work pressure does not affect the employee retention strategy.

Hypothesis 4

H4: Performance and other perquisites contribute to the employment retention strategy.

- H4.0: Performance and other perquisites does not contribute to the employment retention strategy.

1.6 PAPER ORGANIZATION

The paper is organized in the following manner in which Section 1 provides an elaborated introduction about the role of medical representative in pharmaceutical companies of India. Also, the introduction section depicts the significance of the research. The existing research scholarly works associated to the present study are reviewed in Section 2. The current study research methodology is elucidated in Section 3 and the analysis result is presented in Section 4. The discussion and the limitation of the study are set out in Section 5. Finally, the Section 6 provides a conclusion and future recommendation from this study.

2. LITERATURE REVIEW

Employee turnover is a major problem faced by organizations around the world. The main aim of the existing study [14] is to understand the reason for employee turnover as well as retention strategies in a firm. The research findings indicate that the employees have numerous reasons to leave their workplaces. These factors are job satisfaction, job stress, motivation, work environment, rewards and wages. Employee turnover has significant impact on the organization due to costs associated with the employee turnover and also has negative impact on the sustainability, productivity, competitiveness as well as profitability of a firm. Hence, organizations should focus on the requirement of employees and adopt specific strategies to enhance the employee performance as well as minimize the employee turnover.

The commitments owned by an individual working in an organization depends up on the commitment of one's psychology with the firm. The compensation as well as job satisfaction provided by the firm is closely associated with the commitment of medical representative and organization. The main aim of the existing study [15] is to analyse the impact of compensation on the organisational commitment. It also examines whether job satisfaction acts as a mediating role among compensation and organisational commitment. Data were gathered from 100 medical representative in Medan city, North Sumatra, Indonesia. This study utilizes data analysis along with the pathway analysis. The outcome of the existing study concludes that compensation has significant positive effect on the organisational commitment as well as job satisfaction of employees. Additionally, it also reveals the job satisfaction has positive effect on the organisational commitment. Moreover, job satisfaction plays a mediating role among organisational commitment and compensation. Therefore, pharmaceutical companies should provide compensation to their medical representatives in accordance with their work. The company should also enable job satisfaction to the pharmaceutical representative to achieve the performance targets provided by the company. This in turn minimizes the employee turnover in the firm.

In the developing countries, only a few research projects were performed with path analysis for job satisfaction, perceived organisational support as well as turnover intention on sales representative of the pharmaceutical industries. The main objective of the existing study [16] is to derive the relationship among the factors and to provide path analysis. Random sampling technique has been performed. A cross sectional study in the form of a self-administered questionnaire to sales representative in Nigeria has been utilised [16]. The IBM AMOS software tool

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is utilized for data analysis. The outcome of the analysis reveals the existence of positive association among job satisfaction, turnover intention and perceived organisational support. It also recommends the firm should frame employee centered policies to enhance the job satisfaction, job motivation and minimizes the turnover intention.

2.1 RESEARCH GAP

There are several studies [14] focusing on employee retention in various organisation. But the concept in pharmaceutical industry is less understood. The existing study [15] failed to observe the human behaviour of the pharmaceutical sector. The present study relates human psychology with the employee retention in the pharmaceutical industries.

3. RESEARCH METHODOLOGY

3.1 RESEARCH DESIGN

A quantitative method approach is adopted in this research. The quantitative research describes the occurrence by gathering numerical unchangeable detailed data which is being estimated by using mathematical related methods. This in turn provide statistics related to questions of what, when, where, how, how many and how much. It involves the logic, number and objective stance [17]. The quantitative research analysis is innovative research through which an investigator interrogates a particular question, gathers quantifiable data from respondents and it estimates those numbers by utilizing statistics and performs the inquiry in an objective and unbiased manner [18]. The quantitative research uses survey and questionnaire method for the collection of primary data [19].

The research uses the quantitative data which is gathered by means of questionnaires. The research instrument used in this study is questionnaire and it helps to capture the data regarding the employee retention strategies among pharmaceutical companies in Salem, Tamil Nadu. The survey is conducted among the medical representatives in Salem. The structured questionnaire utilised is framed on the basis of variables of research. The questionnaire facilitation and management is managed by means of research assistant.

3.2 STUDY AREA

The research is conducted amongst medical representatives in pharmaceutical companies, Salem located in Tamil Nadu, India who are willing to respond to survey. This is in turn aids for successful completion of this research. The survey is conducted by the researchers. The participants surveyed for this study are from within the pharmaceutical companies of Salem. Therefore, this makes the data collection process easier.

3.3 SAMPLE SIZE AND POPULATION

A sampling strategy is essential since, it is not always easy to gather data from each and every unit of a population [20]. Hence, the process of choosing the appropriate sample size must involve a decision of the number of observations to incorporate in the statistical sample. In addition, the sample size is the main characteristic for any empirical study and its main objective is to create an inference regarding the populace from the sample [21]. The sample size is described as the number of study units and participants that needs to be incorporated and is vital to encounter the research questions of study. A very large sample is sometimes will incur wastage of cost, resources and time. Meanwhile, a small sample size will not be adequate of producing reliable and conclusive outcomes [22]. Hence, it is vital for investigator to assess appropriate sample size to create reliable outcomes with the aid of statistical procedure [23]. Convenience sampling strategy are used in several situations such as exploratory research or when resources and time are limited. Also, certain groups may be overrepresented or underrepresented in the sample because participants are selected depending on convenience. This may produce incorrect findings and conclusions. Nonetheless, it is cost effective and doesn't need lot of time, investment or resources. Therefore, the present study pursues the use of a convenience sampling strategy that encompasses the sample size of 128 medical representatives in Salem (which is neither smaller or larger in order to attain the research purpose in an effective manner). The targeted population comprises medical representatives in Salem, India. This particular group of people are selected due to the nature of study and also these people contribute to a greater extent to the research purpose.

3.4 ETHICAL CONSIDERATIONS

Prior to the survey, the personal details of the respondents were gathered. The personal details include information of residency, full name and description of job and these personal data will not be revealed in order to guarantee the confidentiality to each and every respondent.

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As original data has been collected from participants in this study ethics clearance is required as set out in this journals policy -

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ETHICAL APPROVAL
All submitted articles reporting studies involving human/or animal subjects should indicate in the text whether the procedures covered were in accordance with National Health and Medical Research Council ethical standards or other appropriate institutional or national ethics committee. Where approval has been obtained from a relevant research ethics committee the name of the ethics committee must be stated in the Methods section.

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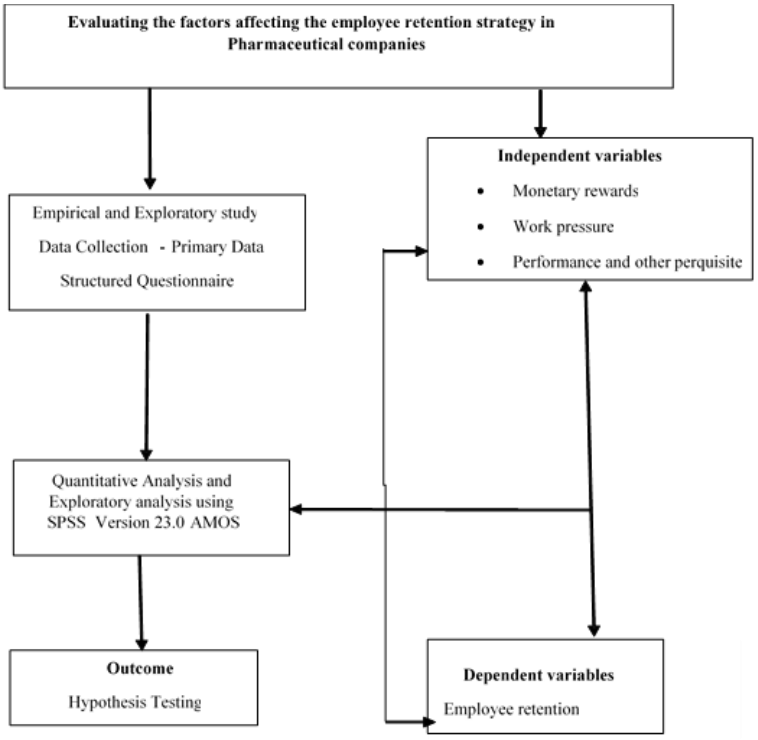
All submitted articles reporting studies involving human/or animal subjects should indicate in the text were in accordance with National Health and Medical Research Council ethical standards and national ethics committee.

3.5 DATA ANALYSIS

An appropriate quantitative data analysis technique is applied for analysing data that are collected using structured questionnaire from the sample respondents. The data are recorded using Microsoft Excel spreadsheet for obtaining study variables. Software tools such as SPSS and AMOS are used to analyse the study variables in Excel spreadsheet. The results are calculated using five evaluation methods such as percentage and factor analysis, KMO and Bartlett test, rotated component matrix and SEM modelling.

FIGURE 1. RESEARCH DESIGN



The data is collected from the medical representatives of Salem, India. Descriptive statistics indicates the collection, formation and representation of data. It is implemented for evaluating the characteristics of datasets. Frequency distributions are visually displayed for frequency counts. The research process is illustrated in Figure 1.

The use of SPSS software in this research makes the results effective and consistent in counting the values. The data estimation comprises three levels, namely, Microsoft Excel is used to incline the demographic variables, and the design of frequency distribution has been completed. Data is analysed by the use of statistics to predict the median range and the mean and standard deviation of several variables in this research. SPSS software is employed in this research. AMOS software is utilised to prove the hypothesis in the study.

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4. RESULTS

4.1 DEMOGRAPHIC DATA DISTRIBUTION OF RESPONDENTS

The present study focuses on the perception of employees towards employee retention in pharmaceutical industry. A total number of 128 medical representatives are considered as participants of the study. The demographic details of the respondents are displayed below in form of tables and graphs.

TABLE 1 DEMOGRAPHIC PATTERNS OF RESPONDENTS

Demographics	Group	Frequency (f)	Percentage (%)
Gender	Male	108	84.40
	Female	20	15.60
	Total	**128**	**100.00**
Age	Below 23 Years	16	12.50
	24 Years – 27 years	50	39.10
	28 Years – 31 Years	34	26.60
	Above 31 Years	28	21.90
	Total	**128**	**100.00**
Educational Qualifications	D. Pharm	34	26.60
	B. Pharm	28	21.90
	Under-Graduation	42	32.80
	Post-Graduation	18	14.10
	Others	6	4.70
	Total	**128**	**100.00**
Monthly Income (Indian Rupees)	Below Rs. 10,000	58	45.30
	Rs. 15,001 – Rs. 20,000	30	23.40
	Rs. 20,001- Rs. 25,000	18	14.10
	Above Rs. 25,000	22	17.20
	Total	**128**	**100.00**
Marital Status	Married	70	54.70
	Unmarried	58	45.30
	Total	**128**	**100.00**
Number of Family Members	> 2 Members	22	17.20
	3-5 Members	88	68.80
	6-8 Members	8	6.30
	< 9 Members	10	7.80
	Total	**128**	**100.00**
Family Structure	Nuclear Family	52	40.60
	Joint Family	76	59.40
	Total	**128**	**100.00**
Religion	Hindu	110	85.90
	Muslim	6	4.70
	Christian	12	9.40
	Total	**128**	**100.00**

Experience	>2 Years	28	21.90
	2 Years – 5 Years	50	39.10
	6 Years – 10 Years	14	10.90
	< 10 Years	36	28.10
	Total	**128**	**100.00**
Reasons to become Medical Representatives	Financial Motivation	44	34.40
	Job Discipline	32	25.00
	Social Status	14	10.90
	Interest	32	25.00
	Others	6	4.70
	Total	**128**	**100.00**
Working Hours Per Day	8- 9 Hours	46	35.90
	9-10 Hours	30	23.40
	10-11 Hours	24	18.80
	11-12 Hours	28	21.90
	Total	**128**	**100.00**

The demographic features of the sample are necessary in-order to relate the perception to socio -economic status of the medical representatives. Opinions may differ based on the socio-economic status and it is essential to examine those factors before identifying objective oriented results. The differences in the inferences may be due to the various classes of socio-economic status.

From Table 1, on analysing the gender distribution of the medical representatives it reveals that majority of the respondents are male and they contribute to 84.40% of the total respondents. The number male employees are high because in the pharmaceutical industry women are promoted less frequently than males. As male employees are higher in number, the percentage of male respondents is higher which provides accurate information. Most of the respondents belong to the younger population. The majority of participants belonging to the category of 24 years to 27 years which convey by the 39.10% of the medical representatives. The educational qualification of the respondents reveals that the employees are educated amongst all categories with under-graduates being the dominant category (32.80%). The analysis of monthly income of the respondents reveals that they are having only a meagre salary when compared to the nature of work they perform. Most of the respondents (45.30%) earn salary of below Rs. 10,000. The marital status of the employees is seen as married as 54.70% on the distribution. 68.80% of medical representative set out that they belong to the 3-5 family members. 59.40% of the medical representatives are living in a joint family structure which is the major adopted family structure. The distribution for religion identifies that the majority are Hindus (85.90%).

The experience levels of the medical representatives seem to be much lower which relates with the age group of the employees. The younger and less experienced medical representatives are involved in the study. There are 39.10% of the employees in the category of 2 to 5 years' experience. Medical representatives prefer this job due to the financial motivation provided by the job. The majority of medical representatives involved in the study revealed that the main reason for joining this job is for financial benefits (34.40%). The working hours per day distribution analysis reveals the majority of the respondents (35.90%) work 8-9 hours per day.

The demographic characteristics such as age, gender, experience, marital status, religion, working hours and monthly income affect employee retention factors in the pharmaceutical industry.

Hence, the hypothesis, H1 is proved.

H1: Demographic characteristics have influence on employee retention strategy in pharmaceutical industry is proved from the above analysis.

Thus, null hypothesis H10 has been rejected from the above analysis.

4.2 FACTOR ANALYSIS

There are several factors affecting the employee retention in the pharmaceutical industries. This has been evaluated through factor analysis. The variables are divided into three

main categories. Three header variables comprised of twenty-one variables evaluate the factors to enhance the employee retention in the pharmaceutical industries.

KMO and Bartlett's Test

Factor analysis is a technique to reduce the various study variables into limited study variables [24]. This is also a reason for referring factor analysis as 'dimension reduction'. To evaluate these aspects, factor analysis was utilized in the current study. However, before utilizing factor analysis, the current study used Kaiser-Meyer-Olkin (KMO) to evaluate the difference in the variables. Along with KMO, the current study also utilized Bartlett's test for evaluating the study samples in order to have equal difference.

TABLE 2. KMO AND BARTLETT'S TEST (BT)

KMO degree of sample acceptability		0.654
BT of Sphericity	Chi-Square	1692.778
	df	210
	Significant (S)	**<0.001****

** indicates significant at 0.01 level

Principal component Analysis (PCA)

Table 2 illustrates the outcome of the KMO and Bartlett's test for analyzing sampling's adequacy and also association between variables of study respectively. The KMO value of 0.654 reveals the moderate significance in sampling adequacy. For Bartlett's test, the value should be below 0.05 in order to illustrate the association between variables of the study. The current study's Bartlett's test outcome is less than 0.001 which demonstrates that there is association between the study variables. It explains the distribution of variables normalized in the present study.

Table 3 illustrates the formation of variance factors and each category of variance exist from one facto to another. The variance depicts the significance of the factor constructed on the basis of analysis. The table explains the variances of the variables existed in the present study. It also highlights the various factors constructed on the basis of variances existed among them.

TABLE 3. TOTAL VARIANCES

Component	Eigenvalues (Initial)			SOS Loadings			Rotation SOS Loadings		
	Total	% of Var.	C %	Total	% of Var.	C%	Total	% of Var.	C %
1	5.147	24.511	24.511	5.147	24.511	24.511	4.708	22.417	22.417
2	3.535	16.832	41.343	3.535	16.832	41.343	3.277	15.604	38.021
3	2.512	11.961	53.304	2.512	11.961	53.304	3.209	15.283	53.304
4	1.809	8.616	61.920						
5	1.506	7.174	69.094						
6	1.203	5.729	74.823						
7	0.811	3.861	78.684						
8	0.736	3.504	82.188						
9	0.721	3.433	85.621						
10	0.495	2.357	87.978						
11	0.444	2.113	90.092						
12	0.359	1.707	91.799						
13	0.329	1.568	93.368						
14	0.281	1.338	94.706						
15	0.224	1.065	95.771						
16	0.213	1.012	96.784						
17	0.205	.976	97.760						
18	0.171	.813	98.573						
19	0.127	.604	99.177						
20	0.112	.532	99.709						
21	0.061	.291	100.000						

Extraction Method: PCA.

Rotated Component Matrix (RCM)

TABLE 4. RCM

	Component		
	1	2	3
Incentives for Performance	0.886		
Rating	0.814		
Recognition of Efforts	0.805		
Foreign Trips and Tours	0.802		
Promotion	0.775		
Service awards	0.756		
Annual incentives	0.710		
Lack of Support from doctor		0.819	
Excessive competition		0.752	
Excessive Workloads		0.749	
Target		0.713	
Conflicting demands			
Lack of support from Organisation			
Not having enough Control over job related decision			
Performance			0.842
Medical Facilities			0.762
Salaries are at par			
Travelling & Dearness			
Leave Travel Allowance			
Bonus			
PF			

The rotated component table depicts the number of factors and variables that are contributed for the formation of the factors. Table 4 explains formation of three factors from the analysis, only thirteen variables are playing a significant part among the twenty-one variables involved in the study. The factors formed are explained below.

Factor – I: Monetary Rewards

The first factor was formed with the variables of Incentives for Performance (0.886), Rating (0.814), Recognition of Efforts (0.805), Foreign Trips and Tours (0.802), Promotion (0.775), Service awards (0.756) and Annual Incentives (0.710). These seven variables were having the nature of rewards and recognition for the medical representatives. The medical representatives are influenced by these variables and based on the nature of the variables the factor is named to be "Monetary Rewards".

Factor – II: Work Pressure

The second factor is constructed with the four variables described in the study. The variables are Lack of Support from doctor (0.819), Excessive competition (0.752), Excessive Workloads (0.749) and Target (0.713). These variables are related to the challenges faced during work and hence factor is termed as "Work Pressure".

Factor – III: Performance and Other Perquisites

The performance and other perquisites are formed with the variables of Performance (0.842) and Medical Facilities (0.762). The variables characteristics entangled in the factor formation seems to perquisites. Therefore, factor was termed as "Performance and other perquisites".

Structural Equation Modelling (SEM)-Pathway Analysis

Structural relationship among dimension of employee retention in pharmaceutical industries

The factor analysis has been provided to outline various factors that are influencing the employees to be retained in the companies based on the opinions of medical representatives. SEM is used to identify the structural relationship among the various dimensions of the employee retention. The inputs given to the SEM are as follows.

Factor – I - Monetary Rewards

Factor – II – Work Pressure

Factor - III- Performance and Other Perquisites

The variables under each factor is coded as below.

Factor – I - Monetary Rewards

Incentives for Performance	-	MR1
Rating	-	MR2
Recognition of Efforts	-	MR3
Foreign Trips and Tours	-	MR4
Promotion	-	MR5
Service awards	-	MR6
Annual incentives	-	MR7
Factor – II – Work Pressure		
Lack of Support from doctor	-	WP1
Excessive competition	-	WP2
Excessive Workloads	-	WP3
Target	-	WP4
Factor - III- Performance and Other Perquisites		
Performance	-	PMF1
Medical Facilities	-	PMF2

TABLE 5 VARIABLE DEFINITION

S.No	Counts of variables	No.(Number)
1.	No. of Variables in the Model	27
2.	No. of Observed Variables	11
3.	No. of Unobserved Variables	16
4.	No. of Exogenous Variables	14
5.	No. of Endogenous Variables	13

Table 5 provides the summary of the count of variables involved in the SEM. It also explains the nature of the variables used in the modelling. The tables provide an account number of variables under each category which is utilised for further analysis.

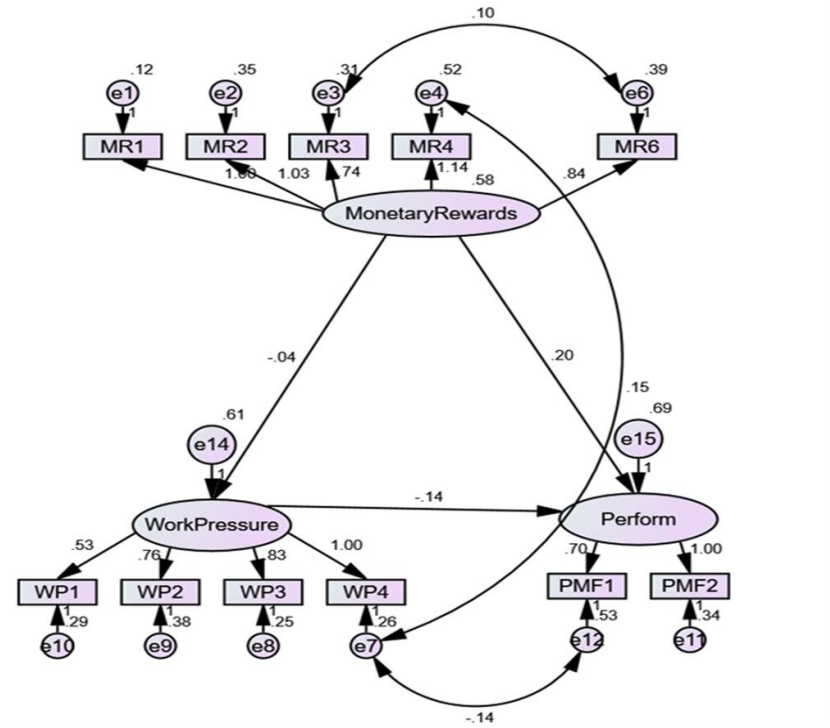
TABLE 6 MAXIMUM LIKELIHOOD ESTIMATES- REGRESSION WEIGHTS

Association			Estimate	S.E.	C.R.	P
Work Pressure	<---	Monetary Rewards	-0.045	0.105	-0.427	0.670
Perform	<---	Monetary Rewards	0.198	0.123	1.609	0.108
Perform	<---	Work Pressure	-0.144	0.121	-1.188	0.235
MR1	<---	Monetary Rewards	1.000			
MR2	**<---**	**Monetary Rewards**	**1.032**	0.091	11.355	***
MR3	**<---**	**Monetary Rewards**	**0.738**	0.079	9.377	***
MR4	**<---**	**Monetary Rewards**	**1.141**	0.104	10.980	***
MR6	**<---**	**Monetary Rewards**	**0.843**	0.089	9.501	***
WP4	**<---**	**Work Pressure**	**1.000**			
WP3	**<---**	**Work Pressure**	**0.827**	0.091	9.137	***
WP2	**<---**	**Work Pressure**	**0.756**	0.095	8.001	***
WP1	**<---**	**Work Pressure**	**0.528**	0.077	6.885	***
PMF2	<---	Perform	1.000			
PMF1	<---	Perform	0.702	0.408	1.720	0.085

(***reveals significance at 0.01 level and ** reveals significance at 0.05 level)

Table 6 describes the association which reveals the cause as well as effect relationship among the variables and also factors involved in the modelling. The estimates give the genuine relationship among the variables and negative symbol before the estimate values reflect negative impact on the dependent variables. Moreover, it describes seven pairs of significant relationship that exists among the various variables and factors involved in the model.

FIGURE 2 PATH ANALYSIS USING LATENT VARIABLES (EXCLUSIVE MODEL)



The diagrammatic model explains the association among the factors and variables in an exclusive way (Figure 2). The multiple cause as well as effect relationship between the factors is represented with the support of regression estimates. The relationship exists among the co-variances of the model are briefly discussed. The concept of employee retention among pharmaceutical employees is evaluated through the aspects of Monetary Rewards, Work Pressure and Performance and other perquisites. These three factors exhibit cause and effect relationship among them which is proved through SEM. The employee retention among pharmaceutical employees is determined on the basis of beta estimates. These relationships are evaluated through the other factors which impact the employee retention. Therefore, the results of the path analysis are highly reliable.

From the above analysis, hypothesis 2-4 are proved.

H2: Monetary reward has significant impact on the employee retention strategy.

H3: Work pressure affect the employee retention strategy.

H4: Performance and other perquisites contribute to the employment retention strategy.

Therefore, the three main factors monetary reward, work pressure and performance and other perquisites have significant impact on the employee retention strategy. The null hypothesis is rejected from the above analysis.

Goodness of Fit (GFI)

TABLE 7 GFI ANALYSIS

Indices	Actual Value	Suggested value
Chi-square/Df(CMIN)	**1.857**	< 5.00 (Hair et al., 1998)
GFI	**0.904**	> 0.80 (Joreskog and Sorbom, 1981)
AGFI	**0.833**	> 0.80 (Joreskog and Sorbom, 1981)
NFI	**0.897**	> 0.80 (Joreskog and Sorbom, 1981)
CFI	**0.948**	> 0.90 (Daire et al., 2008)
RMR	**0.058**	< 0.08 (Hair et al. 2006)
RMSEA	**0.082**	< 0.09 (Hair et al. 2006)

(GFI – Goodness of Fit, AGFI –Adjusted Goodness of Fit, NFI- Normed-Fit Index, CFI – Comparative Fit Index, RMR – Root Mean Squared Residual, RMSEA – Standardised Root Mean Squared Residual)

Table 7 evaluates the GFI that validates the reliability as well as fit of the model. It is constructed using the Analysis of Movement Structure (AMOS). The employee retention factors do have mutual relationship among them. It is depicted by the significant values of the various factors like GFI (1.857), AGFI (0.904), NFI (0.833), CFI (0.948), RMR (0.058) and RMSEA (0.082). These indices reveal the validity and reliability of the model constructed from the factors of employee retention in pharmaceutical industries.

5. DISCUSSION

From the analysis of gathered data from respondents of study inferences for the study are made. The existing study [25] focuses on the factors contributing to the retainment of talent sales force in the pharmaceutical industries. The factors such as employee engagement, dedication and effort recognition by the senior managers are contributing to the employee retention strategy in pharmaceutical companies. The present study also acknowledges it, since the monetary rewards includes the factors such as effort recognition, promotion and incentive for performance. Therefore, these factors elevate employee engagement towards the organisation which in turn increases the employee retention.

Similarly, the existing study [26] analyses the effect of job stress on the employee retention factor. From the descriptive analysis, it proves there exists a significant association among job stress and performance of the employee. It also recommends the organisation to provide incentive benefits such as bonus, counselling and mediation programs which improves the performance of employee in the long run. The present study also reveals the job stress has negative impact on the employee retention strategy.

In addition to it, the existing work [27] investigates the determinants of employee retention strategies in pharmaceutical industries. Benefits, work relationship, job condition, motivation, organisational culture and finally leadership are the six main determinants that have positive impact on the employee retention factor. Long-term employee retention will lead to elevate organisational performance. The present study articulates that monetary rewards, work condition and performance have significant impact on the employee turnover in the pharmaceutical companies.

LIMITATIONS

Every study has its own limitation, so does the present study. The main limitation of the study is that the participants of the research are from Salem, Tamil Nadu, India. Hence, the results might lack in generalizability. Moreover, the present study focuses on the pharmaceutical industries which is restricted to the particular sector. The current study did not include other significant components such as leadership, culture that have impact on the employee retention strategies. However, the implication provided by the research can be useful to improve the quality of education in the upcoming years across the world.

6. CONCLUSION

The present research study performed a detailed analysis regarding the demographic characteristics, factor affecting the employee retention in pharmaceutical companies. Moreover, the model has been constructed to describe the inter relationship among the factors that are contributing for the employee retention. The factors are monetary rewards, work pressure and performance and other perquisites. Those factors play a significant role in the employee retention on the basis of employee perception.

The inter-relationship is illustrated by the model and the modification that one factor has direct impact on another factor. The study recommends the pharmaceutical companies take necessary actions by enhancing the various factors involved in the employee retention. Monetary rewards improve employee engagement in the organisation which in turn enhance the employee retention over a long period of time. This will enhance the organisational performance economically. The present study also highlights the innovative exclusive model which depicts the interrelationship among the factors involved in the retention strategy.

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RESEARCH ARTICLE

PATIENT AND FAMILY SATISFACTION WITH INTENSIVE CARE IN A MEGA UNIVERSITY HOSPITAL: AN EXPLORATORY STUDY

Hanaa Abdullah AbuZina[1], Yasmine Toson Toman[1], Abdel-Karim Gamal El Din Kamel[2], Hend Samy Ibrahim[1], Ahmed Abdel Hamid Taha[3]*

1. Public Health and Community Medicine, Faculty of Medicine, Cairo University, Egypt
2. New Kasr Al Ainy Hospital, Faculty of Medicine, Cairo University, Egypt
3. Cairo University Hospitals, Faculty of Medicine, Cairo University, Egypt

Correspondence: yasmine.toson@kasralainy.edu.eg

ABSTRACT

BACKGROUND:

Being admitted to the intensive care unit (ICU) is stressful for both patients and families, in addition to being very costly. Therefore, the ICU was chosen for the conduct of the study in this university hospital, the New Kasr Al-Ainy Hospital (NKHICU), Egypt. This was the first such study for this facility.

OBJECTIVE:

Identify NKHICU patient and family satisfaction in order to prioritize opportunities for quality improvement.

METHODS:

This was health-system research involving exploratory design. Work began by providing training for selected NKHICU administrative staff to help with data collection activities. Next, a well-prepared checklist was used to observe some quality dimensions. Finally, satisfaction was identified using two ICU-designed interview questionnaires for patients and family members who matched the study eligibility criteria. Quantitative and qualitative findings were analyzed independently and combined in the discussion. The mean percentage satisfaction scores of the participants were calculated. The reliability of questionnaires was measured using Cronbach's Alpha.

RESULTS:

The observation revealed 'excellent' results, except for some inconvenient conditions in the family waiting areas. The highest mean percentage score of patient and family satisfaction was for the neat appearance of NKHICU staff (96.4%, and 97.1%, respectively) and the continuous availability of nurses to respond to patient needs (94.7%, and 94.3%, respectively). The least mean percentage score of patient and family satisfaction was for the shortage of required drugs/supplies (51.5%, and 40.7%, respectively). The top suggestions raised by the participants were for increasing the availability of medications/supplies and the reduction in hospital bills.

CONCLUSION:

The provision of adequate drugs/supplies, reduction in bills, and addressing patients' and families' concerns will improve their satisfaction with services.

KEYWORDS

ICU, Egypt, family satisfaction, quality improvement.

INTRODUCTION

Healthcare is primarily concerned with patient care and satisfaction without compromising costs and profits. Moreover, as with any other organization, healthcare facilities cannot survive if they cannot maintain quality services for patients and families. Organizations spend extensive resources in a never-ending quest for improvement [1]. This underpins the importance of identifying the feedback of the patients and their families, which is then translated into quality improvement projects [2, 3].

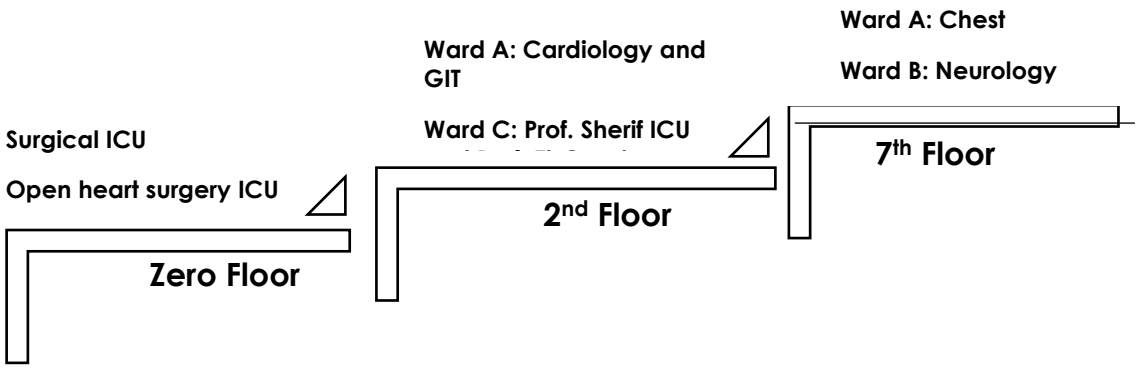
Egyptian healthcare facilities, especially the top-level ones such as ICUs, carry the burden of introducing considerable measures to ensure quality performance and competitiveness. Additionally, having a patient in the ICU is stressful for both patients and their families [4], besides being very costly [5].

Satisfaction can be defined as clients' feelings and perceptions of provided healthcare services [6]. Nevertheless, other authors defined satisfaction as a degree of similarity between clients' expectations of best care and perceptions of received care [7].

METHODS

Study design: This was health-system researchusing a exploratory design method.[**8**]

FIGURE (1): DISTRIBUTION OF NKHICU AT THE TIME OF DATA COLLECTION



STUDY SETTING

The study was performed in the New Kasr Al-Ainy Hospital ICU (NKHICU) (the hospital provides a total of X 1200 beds across the hospital). It is a university hospital affiliated with Cairo University. University hospitals are teaching hospitals managed by the Ministry of Higher Education and Scientific Research. This hospital provides quality tertiary medical care (paid non-investment). It has eight multispecialty ICUs (providing 78 beds) distributed along three floors as shown in Figure (1).

STUDY PARTICIPANTS

Thirty NKHICU patients - conforming to the inclusion criteria- participated in the study. Ross emphasized that including 30 individuals in patient satisfaction surveys will provide sufficient data [8]. Inclusion criteria for study participants were for patienst with a length of stay not less than two days in the NKHICU; fair consciousness level; and willingness to participate in the research. Thirty "next-of-kin" family members were also included, who are persons closest to the patient. Only one family member per patient could participate. So, there were 60 participants in the total number. A convenience sampling method was used.

THE STUDY INSTRUMENTS

Data in this study was collected using an observation checklist and patient and family members questionaires.

A checklist for structured observations was prepared. It was based on previous related research studies [4, 9, 10]. The checklist included sections related to the general characteristics of the NKHICU, the physical environment around the beds, the interaction between the study patients/family members and NKHICU staff, the characteristics of the waiting area allocated for families, and the services provided for them.

Additionally, two structured interview satisfaction questionnaires were prepared for patients and families. The questionnaires were adapted from previous research studies, especially the Critical Care Family Satisfaction Survey (CCFSS) [9] and the FS-ICU [11] and translated into colloquial Arabic language to avoid miscomprehension by participants of different educational levels [12]. It was translated back into English to gather the survey results.

The subsections of the questionnaires included one for sociodemographic data, another for measuring satisfaction regarding some quality dimensions [using a Likert scale ranging from 5 (very satisfied) to 1 (very dissatisfied)], and a third for suggestions for improvement of NKHICU services.

Quality dimensions listed in the patient questionnaire included the following subscales: comfort (physical environment and appearance of the staff), support and courteousness of staff, assurance, and response to needs, the privacy of patients, and overall satisfaction with the quality of services.

The family satisfaction questionnaire included questions about the comfort of the waiting area in addition to those in the patient questionnaire.

RELIABILITY OF THE QUESTIONNAIRES:

Cronbach's Alpha Coefficient was used to measure the internal consistency of the questionnaires. It was calculated by SPSS (Statistical Package for Social Studies) version 21 (IBM Inc., Chicago, IL). The total alpha coefficient was 0.90 for the whole scale of the patient questionnaire and 0.71, 0.97, 0.79, and 0.93 for the comfort, support, assurance, and privacy subscales, respectively. It was 0.69 for the whole scale of the family questionnaire and 0.61, 0.81, 0.87, and 0.98 for the comfort, waiting area, assurance, and privacy subscales, respectively. A sample size of 30 can be used to measure reliability using Cronbach's alpha [13].

DATA COLLECTION AND STUDY PHASES

The work began by preparing the observation checklist. Pilot testing of the checklist was undertaken. No modifications were needed, and it was deemed simple and handy for its purpose.

Next, a training session on observation techniques was provided to two personnel working for the NKH public relations department. The session was conducted by two researchers, and a PowerPoint presentation was used in an interactive learning session.

To ensure objectivity and avoid observational bias, the NKHICU was observed by three independent observers at different times of the day and on different days of the week for two weeks. The observation was done by two researchers and two trainees. Each observer took at least 15 minutes of observation per unit.

Determining the satisfaction levels of the patients and family members began by developing the questionnaires. They were pre-tested on five patients and five family members (included in the total number). The aim was to identify any ambiguous questions or any difficulties in understanding the questionnaires. They were deemed suitable and did not need modifications.

Next, two researchers provided training to two administrative personnel in NKH on how to use the interview questionnaire in data collection. The researchers used a PowerPoint presentation and an interactive learning session.

Data collection using the interview questionnaires: It lasted about ± 2 days/week. It took about 20 to 30 min to finish the interview questionnaire. Interviewees' responses were recorded using field notes. To ensure accuracy, the notes were recorded during and immediately after the interview [14].

The objectives of the study were explained to all the study participants before data collection and oral informed consent was obtained from all.

STRENGTHS OF THE STUDY

- It's the first study to measure patient and family satisfaction in the NKHICU.
- The stakeholders of the NKH were involved in the study from the start.
- Used more than one tool - yet simple and well prepared (triangulation of data).
- Among the data collectors were several workers in the NKH who received training from the researchers. This facilitated timely data collection, provided a chance to develop workers from the NKH, and improved teamwork, creativity, and organizational communication.

ETHICAL CONSIDERATIONS

This study was conducted according to the World Medical Association Declaration of Helsinki [15]. The Research Ethics Committee (REC) in the Faculty of Medicine, Cairo University, approved this study(Approval number: N-54-2020). The corresponding author obtained written approval from hospitals' administrative authorities and explained the study's purpose to all participants. Informed consent was obtained from all the participants before the study, and voluntary participation was ensured. Confidentiality of data was guaranteed (questionnaires were anonymous). All the data was used for scientific purposes only.

DATA ANALYSIS

Data were coded, entered, and statistically analyzed by Microsoft Excel and SPSS (version 21). Quantitative variables were summarized as means and standard deviations. Categorical variables were summarized by frequencies and percentages. The mean percentage score for the survey was calculated by multiplying the "very satisfied" column by 5, the "satisfied" column by 4, the "neutral" column by 3, the "dissatisfied" column by 2, and the "very dissatisfied" column by 1. Then summing the resulting figures. After that, division of the sum by the total number of respondents (n=30). The resulting figure (ranges between 1 and 5) was then divided by 5 and multiplied by 100 for meaningful presentation [16].

RESULTS

RESULTS OF THE STRUCTURED OBSERVATION OF THE NKHICU

These results were based on the structured observation carried out by four observers. Each ICU was observed by three observers independently on three different days.

1. General characteristics of the NKHICU:

Regarding the general characteristics of the NKHICU, Matrix (1) shows that the greatest number of beds were present in the surgical ICUs and Professor Sherif Mokhtar ICU (22 and 12, respectively). The smallest number of beds (n=4) was found in the Neurology ICU. The rest of the ICUs had an almost equal number of beds (approximately 8).

The largest ratio between the number of physicians to the number of beds per shift was about 1:4 in the Open-Heart Surgery (adults), Chest, and Neurology ICUs. The Surgical ICUs had the lowest physician: bed ratio (1:11). The rest of the ICUs had physician-to-bed ratios ranging from 1:6 – 1:8. The ratio between the number of nurses to the number of beds per shift was 1:1 in the Cardiology, Gastroenterology, Professor Sherif Mokhtar, Professor El-Gendy, and Neurology ICUs. The lowest nurse-to-bed ratio was in the Open Heart ICU (1:4).

As shown in Matrix 1, the duration and time of patient visiting was one hour from 3-4 pm.

MATRIX 1: GENERAL CHARACTERISTICS OF THE NKHICU

ICU / Checked items	Zero floor		2nd floor				7th floor	
			Ward (A)		Ward (C)		Ward (A)	Ward (B)
	Surgical ICU	Open heart surgery (adults)	Cardiology	Gastro-enterology	Prof. Sherif Mokhtar	Prof. El-Gendy	Chest	Neurology
# of beds and their distribution	22; 3 halls with 6 beds in each + a hall with 4 rooms with 1 bed in each	8; all in 1 hall	8; 2 rooms with 4 beds in each	8; 2 rooms with 4 beds in each	12; 3 halls with 4 rooms in each. Each room has 1 bed.	8; a hall with 6 beds + 2 rooms with 1 bed in each.	8; 2 rooms with 4 beds in each	4; all in 1 hall

# of physicians/8 hours	2-3	2	1	1	2	1	3	1
# of nurses/8 hours	8-10	2-3	8	3-7	11	7	4	4
# of workers/8 hours and their categories	4; 1 store-keeper 1 support services 2 cleaning workers	4; 2 store-keeper 1 support services 1 cleaning worker	3; 1 store-keeper and support services 2 cleaning workers	2; 1 support services 1 cleaning worker	2; 1 store-keeper and support services 1 cleaning worker	2; 1 store-keeper and support services 1 cleaning worker	3; 1 store-keeper 1 support services 1 cleaning worker	3; 1 store-keeper 1 support services 1 cleaning worker
# of family members allowed at the time of visits	No limitation on the number of family members but should not exceed 2 at a time							1
Time and duration of the visit	Sixty minutes from 3.00-4.00 pm							
Are family members allowed to stay overnight with the patients?	No							
The consciousness level of patients	Some are conscious						Unconscious	

2. The physical environment around the beds in the NKHICU:

Matrix 2 shows that the three observers confirmed that all the NKHICU were free of insects and unpleasant odors and had clean walls.

Having trash-free floors was checked as 'not fulfilled' by one observer on the second floor. The following items were checked as 'not fulfilled' by one observer in the Chest ICU; beds covered by clean linens, suitable room temperature, good lighting, and crack-free paint on the wall.

All three observers checked the appearance of the physicians and nurses as neat and clean in all the studied ICUs. One observer checked that the 'neat and clean appearance of the workers' items was not fulfilled in the Professor Sherif Mokhtar and Chest ICUs. All three observers determined that all ICUs on the second floor were secure for patients and their belongings.

MATRIX 2: THE PHYSICAL ENVIRONMENT AND STAFF-PATIENT/FAMILY MEMBER INTERACTIONS IN THE NKHICU

ICU / Checked items		Zero floor		2nd floor				7th floor	
		Surgical ICU	Open heart surgery (adults)	Ward (A)		Ward (C)		Ward (A)	Ward (B)
				Cardio-logy	Gastro-enterology	Prof. Sherif Mokhtar	Prof. El-Gendy	Chest	Neuro-logy
The physical environment in the ICU	Dirt-free floors	1	1	1	1*	1	1	1	1
	Trash-free floors	1	1	1*	1*	1*	1*	1	1
	Clean linens	1	1	1	1	1	1	1*	1
	Free of crawling insects	1	1	1	1	1	1	1	1
	Free of flying insects	1	1	1	1	1	1	1	1
	Suitable temperature	1	1	1*	1	1	1	1*	1
	Good lighting	1	1	1	1	1	1	1*	1
	Free of unpleasant odors	1	1	1	1	1	1	1	1
	Clean walls	1	1	1	1	1	1	1	1
	Crack-free paint	0*	1*	1	1*	1	1*	1*	1
Personnel appearance: neat	Physicians	1	1	1	1	1	1	1	1
	Nurses	1	1	1	1	1	1	1	1
	Workers	1	1	1	1	1*	1	1*	1
Maintaining quietness and silence in ICU	Free of suffering groan from patients	1*	1	1	1*	1	1	1*	1
	Free of help calls from patients	1	1	1	1	1	1	1	1
	Free of altercations	1	1	1	1	1	1	1	1
Security of the patient and belongings		1*	1	1	1	1	1*	1	1
Staff-patient interactions in the NKHICU									
The doctor/nurse expresses kindness & respect to the patient		1	1	1	1	1	1	1	1
Regular availability of nurses		1	1	1	1	1	1	1	1
The doctor responds satisfactorily to patient inquiries		1	1	1	1	1	1	1	1
The nurses respond satisfactorily to patient inquiries		1	1	1	1	1	1	1*	1
The nurses respond quickly to patient help calls		1	1	1	1	1	1	1*	1
Privacy is considered during the examination		1	1	1	1	1	1	1	1
Staff-family interaction in the NKHICU									
The doctor/nurse expresses kindness & respect to the family members		1	1	1	1	1	1	1	1
The doctor/nurse explains the patient's condition to his family members		1	1	1	1	1	1	1	1
The doctor responds satisfactorily to family member inquiries		1	1	1	1	1	1	1	1
The nurses respond satisfactorily to family member inquiries		1	1	1	1	1	1	1	1
Privacy is provided for the family members during the visits		1	1	1	1	1	1	1	1
No altercations between staff and family members		1	1	1	1	1	1	1	1

1= Item is checked as fulfilled by the 3 observers. 1*= Item is checked as fulfilled by 2 observers and as not fulfilled by the third.

0= Item is checked as not fulfilled by the 3 observers. 0*= Item is checked as not fulfilled by 2 observers and as fulfilled by the third.

3. Staff-patient interaction in the NKHICU:

Matrix 2 shows the interaction between the study's patients and NKHICU staff. One observer checked that the nurses did not respond satisfactorily to patient inquiries and help calls in the Chest ICU. Otherwise, all three observers checked all the items as fulfilled in all the studied ICUs.

4. Staff-family member interactions in the NKHICU:

Matrix 2 shows the interaction between the study family members and NKHICU staff. All items were checked as fulfilled by the three observers in all the study ICUs.

5. Characteristics of the waiting area for the family members and services provided for them:

Matrix 3 shows the characteristics of the waiting area for NKHICU family members, and the services provided for them. There were no dedicated waiting areas for family members on the Zero and 7th floors or outside Ward (A) on the 2nd floor. Family members in these ICUs were obliged to either stand or sit on the floor while waiting outside.

There was one waiting area for family members in Ward (C) on the 2nd floor.

In the physical environment of the waiting area, all items were marked as 'fulfilled' by the three observers except for five items (marked as 'not fulfilled' by two observers), namely the items referred to as having dirt-free and trash-free floors, having clean walls, having a suitable number of seats and presence of a trashcan. The number of seats available was 13. One observer remarked that these seats were not enough leaving some family members standing.

MATRIX 3: CHARACTERISTICS OF THE FAMILY WAITING AREAS OUTSIDE STUDIED ICUS AND SERVICES PROVIDED FOR THEM

ICU / Checked items		Zero floor		2nd floor				7th floor	
				Ward (A)		Ward (C)		Ward (A)	Ward (B)
		Surgical ICU	Open heart surgery (adults)	Cardio-logy	Gastro-enterology	Prof. Sherif Mokhtar	Prof. El-Gendy	Chest	Neuro-logy
The physical environment in the waiting area	Dirt-free floors	No special waiting area for the family members	No special waiting area for the family members	No special waiting area for the family members	No special waiting area for the family members	0*		No special waiting area for the family members	No special waiting area for the family members
	Trash-free floors					0*			
	Free of crawling insects					1			
	Free of flying insects					1			
	Suitable temperature					1			
	Good lighting					1			
	Free of unpleasant odors					1			
	Clean walls					0*			
	Crack-free paint					1			
	Suitable #. of seats					0*			
	Seats are comfortable					1			
	There is a trashcan					0*			
Presence of a free source of drinking water, e.g. water cooler						0			
Water Closets (WCs)						Present on the second floor but not specifically dedicated to the family members.			
Security of family members and their belongings						1			
Proximity of waiting area to patients						Near the patients; in the same ward			

1= Item is checked as fulfilled by the 3 observers. 1*= Item is checked as fulfilled by the 2 observers and as not fulfilled by the third one.
0= Item is checked as not fulfilled by the 3 observers. 0*= Item is checked as not fulfilled by the 2 observers and as fulfilled by the third on

RESULTS OF THE STRUCTURED INTERVIEW SATISFACTION QUESTIONNAIRES FOR THE STUDY PATIENTS

Matrix 4 shows the demographic characteristics of the study patients. The majority of them were males (70%). Their ages ranged between 30-75 years, with a mean of 58 years (±12.2). Almost half (46.7%) were aged 60 years and above. About one-third (30%) had a university education. Nearly two-fifths were governmental employees (43.3%), and less than one-fifth were professionals (16.7%). The ICU stay ranged from 2 to 4 days in 70% of the study patients as shown in Matrix 5.

MATRIX 4: SOME DEMOGRAPHIC CHARACTERISTICS OF THE STUDY'S PATIENTS

Item	n. =30	%
Sex:		
• Males	21	70.0
• Females	9	30.0
Age (years) intervals:		
• 30-	3	10.0
• 40-	2	6.7
• 50-	11	36.6
• 60-	8	26.7
• 70-	6	20.0
Age (years):		
• Range (Min: Max)	(30:75)	
• Mean (±SD):	58 (±12.2)	
Education		
• Illiterate	5	16.7
• Can read & write	2	6.7
• Primary	3	10.0
• Secondary/diploma	11	36.6
• University	9	30.0
Occupation		
• Don't work/housewife	6	20.0
• Worker	1	3.3
• Employee	13	43.3
• Craftsman	3	10.0
• Professional	5	16.7
• Pension	2	6.7

MATRIX 5: DISTRIBUTION OF THE STUDY PATIENTS ACCORDING TO THEIR LENGTH OF STAY IN THE NKHICU

Item	n. =30	%
Length of stay (days) intervals:		
• 2-4	21	70.0
• 5-9	6	20.0
• 10-	3	10.0
Length of stay (days):		
• Range (Min: Max)	(1:15)	
• Mean (±SD)	4.1 (±3.5)	

Quantitative findings

Matrix 6 shows the mean percentage satisfaction score of the study patients regarding some NKHICU quality dimensions.

Most patients were satisfied regarding the following aspects of care, which had the highest mean percentage score (in descending order) i.e. ICU staff have a neat appearance 96.4%, continuous availability of nurses to respond to patient needs 94.7%, courtesy of the staff 93.1%, ICU staff listen and respond to inquiries 91%, prompt response to patient needs 89%, presence of good security 88.9%, and competence of nurses 88.6%.

The aspects of care that had the least satisfaction (least mean percentage score) were the shortage of required drugs/supplies 51.5%, the doctors don't involve the patient in medical decisions 60.9%, and the high service price vs. its quality (unexplained high bills) 62.2%. The priorities for quality improvement are those with the least mean percent scores.

MATRIX 6: PATIENT SATISFACTION REGARDING SOME NKHICU QUALITY DIMENSIONS

Statement	Very satisfied %	Satisfied %	Neutral %	Unsatisfied %	Very unsatisfied %	Not applicable/don't know %	Mean % Score
Comfort: Physical environment of the ICU and the appearance of staff							
Cleanliness	50.0	16.7	23.3	3.3	6.7	0.0	80
Suitable atmosphere	46.7	23.3	13.3	16.7	0.0	0.0	80
Level of quietness	56.7	3.3	16.7	10.0	13.3	0.0	76
Free of unpleasant odors	70.0	6.7	3.3	3.3	16.7	0.0	82
Personnel have a neat appearance	85.7	10.7	3.6	0.0	0.0	0.0	96.4
Support and courtesy from ICU staff							
Courtesy	83.3	0.0	6.7	6.7	0.0	3.3	93.1
Emotional Support	70.0	10.0	6.7	3.3	3.3	6.7	90
Assurance and response to needs							
Personnel listen and respond to inquiries	80.0	3.3	6.7	0.0	6.7	3.3	91
Personnel give clear answers	66.7	6.7	6.7	6.7	10.0	3.3	83.4
Personnel give updates about the condition	37.9	6.9	17.2	3.4	17.2	17.2	70.8
Doctor involves the patient in medical decisions	20.0	6.7	20.0	10.0	16.7	26.7	60.9
The patient knows the names of the responsible staff	43.3	10.0	20.0	6.7	13.3	6.7	73.6
Continuous availability of nurses to respond to patient needs	93.3	0.0	0.0	0.0	6.7	0.0	94.7
Prompt response to patient needs	80.0	0.0	6.7	0.0	10.0	3.3	89
Availability of the required drugs/supplies	23.3	3.3	3.3	26.7	30.0	13.3	51.5
Waiting time for investigations/consultations	63.3	6.7	0.0	0.0	13.3	16.7	85.6
Competent doctors	46.7	20.0	13.3	0.0	6.7	13.3	83.1

Competent nurses	60.0	16.7	13.3	3.3	0.0	6.7	88.6
Privacy provided at ICU							
Privacy for patient	60.0	10.0	6.7	10.0	13.3	0.0	78.7
Privacy at the time of the visit	55.2	6.9	10.3	0.0	13.8	13.8	80.8
Additional items							
Presence of security	75.0	10.7	0.0	0.0	10.7	3.6	88.9
Quality of service for its price	33.3	22.2	0.0	11.1	33.3	70.0	62.2
Overall satisfaction	53.3	30.0	13.3	0.0	3.4	0.0	86.0

Qualitative findings

'Increasing the availability of medications and supplies' ranked highest on the list of suggestions for improvements raised by the study patients (30.0%), followed by 'proper maintenance of medical devices' (16.7%). The next frequent suggestions were: 'Reducing the service price', 'increasing courtesy of staff', 'proper cleaning of WCs', and 'keeping quietness/nurses speak in a low voice', (6.7%) each.

RESULTS OF STRUCTURED INTERVIEW SATISFACTION QUESTIONNAIRES FOR THE STUDY FAMILY MEMBERS

Matrix 7 shows that an equal number of male and female study family members responded to the interview questionnaire (15 each). Their ages ranged from 20-72 years, with a mean of 41.3 years (±13.8). The majority were in the age group between 50-59 years (30.0%).

MATRIX 7: SOME DEMOGRAPHIC CHARACTERISTICS OF THE STUDY FAMILY MEMBERS

Item	n. =30	%
Sex:		
• Males	15	50.0
• Females	15	50.0
Age (years) intervals:		
• 20-	7	23.3
• 30-	7	23.3
• 40-	5	16.7
• 50-	9	30.0
• 60-	2	6.7
Age (years):		
• Range (Min: Max)	(20:72)	
• Mean (±SD):	41.3 (±13.8)	

Quantitative findings

Matrix 8 shows the mean percentage satisfaction score of the family members about some NKHICU quality dimensions. Most family members were satisfied regarding the following aspects of care, which had the highest mean percentage score (in descending order), e.g., ICU staff have a neat appearance 97.1%, continuous availability of nurses to respond to patient needs 94.3%, ICU is free of unpleasant odors 94%, good privacy of their patient relative 88.6%, staff listen and respond to inquiries 87.6%, good privacy during visiting hours 83.8% and presence of good security 83.2%.

The aspects of care that had the least satisfaction (least mean percentage scores) were the shortage of required drugs/supplies 40.7%, the high service price vs. its quality (unexplained high bills) 41.1%, and the absence of potable water/ inconvenient conditions in the waiting area 41.4%.

MATRIX 8: SATISFACTION OF THE FAMILY MEMBERS REGARDING SOME NKHICU QUALITY DIMENSIONS

Statement	Very satisfied %	Satisfied %	Neutral %	Unsatisfied %	Very unsatisfied%	Not applicable/ don' t know %	% Score
Comfort: Physical environment and the appearance of staff							
Cleanliness	36.7	40.0	23.3	0.0	0.0	0.0	78
Suitable atmosphere	50.0	20.0	26.7	0.0	3.3	0.0	80
Level of quietness	50.0	20.0	13.3	6.7	6.7	3.3	76.6
Free of unpleasant odors	83.3	10.0	6.7	0.0	0.0	0.0	94
Personnel neat appearance	85.7	7.1	7.1	0.0	0.0	0.0	97.1
Ease of arrival at ICU	46.7	3.3	0.0	13.3	13.3	23.3	70.4
Waiting area							
Suitable number of seats	10.0	10.0	3.3	10.0	66.7	0.0	36.7
Cleanliness	30.0	13.3	3.3	6.7	36.7	10.0	54.1
Presence of potable water	20.0	6.7	0.0	0.0	66.7	6.7	41.4
Cleanliness of WCs	16.7	20.0	16.7	6.7	33.3	6.7	54.3
Lightning	30.0	6.7	6.7	16.7	30.0	10.0	53.3
Support and courtesy from ICU staff							
Courtesy	60.0	20.0	6.7	3.3	6.7	3.3	82.8
Emotional Support	63.3	16.7	3.3	0.0	13.3	3.3	81.4
Assurance and response to needs							
Personnel listen and respond to inquiries	70.0	6.7	6.7	6.7	6.7	3.3	87.6
Continuous availability of nurses to respond to patient needs	80.0	3.3	3.3	3.3	3.3	6.7	94.3
Availability of required drugs/supplies	14.3	3.6	10.7	14.3	57.1	0.0	40.7
Waiting time for investigations/consultations	43.3	3.3	10.0	10.0	23.3	10.0	65.2
Competent Doctors	40.0	6.7	13.3	3.3	3.3	33.3	80
Competent Nurses	48.3	6.9	13.8	3.4	3.4	24.1	81.8
Privacy provided at ICU							
Privacy for patient	57.1	7.1	0.0	0.0	10.7	25.0	88.6
Privacy during visiting hours	60.0	10.0	6.7	0.0	10.0	13.3	83.8
Additional items							
Presence of good security	48.1	7.4	3.7	7.4	3.7	29.6	83.2
Quality of service vs its price	16.7	0.0	0.0	33.3	50.0	40.0	41.1
Overall satisfaction	20.0	23.3	43.3	10.0	3.4	0.0	64.7

Qualitative findings

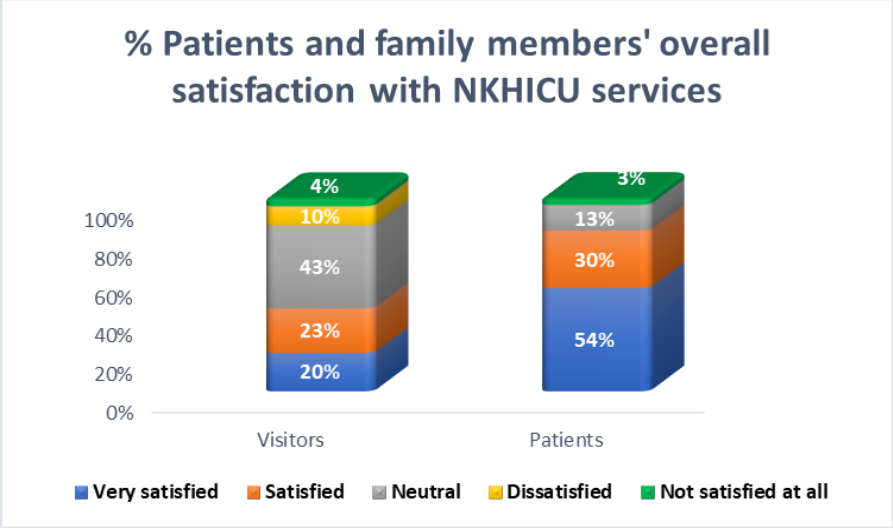
The top three suggestions that were raised by the family members were related to increasing the availability of some medications/supplies, improving the waiting area, and reducing the service prices (20.3%, 17.6%, and 9.5%, respectively).

OVERALL RATING OF THE QUALITY OF NKHICU SERVICES

Figure 2 demonstrates that most of the study patients (84.0%) showed satisfaction with the NKHICU service (percentage satisfied and very satisfied), while only about

two-fifths of family members (43.0%) showed satisfaction (percentage satisfied and very satisfied).

FIGURE 2: THE OVERALL SATISFACTION OF THE STUDY PATIENTS AND FAMILY MEMBERS WITH THE NKHICU SERVICES PROVIDED



DISCUSSION

This is the first ICU patient and family satisfaction survey conducted in NKH, a mega teaching hospital (hospital with 1200 beds and full range of primary, secondary, tertiary and quaternary services). The study aimed to improve the quality of services in the NKHICU with the goal of patient and family satisfaction. Measuring patient and family satisfaction has a great influence on the quality improvement of care. Their evaluation of care is a truthful tool to provide an opportunity for improvement, enhance healthcare decisions, reduce cost, set plans for effective management, monitor healthcare performance, and provide benchmarking across healthcare facilities. Moreover, as healthcare services tend to focus on patient-centered care, measuring patients' satisfaction indicates their involvement in decision-making and their role as collaborators in improving healthcare quality [17].

Being admitted to the ICU is stressful for both patients and families [4], in addition to being very costly [5]. For this reason, the ICU was chosen for conducting the study.

Min et al., it was crucial to identify the satisfaction levels of both patients of the NKHICU and their families. In many incidences, ICU patients are unable to actively participate in discussions involving their diagnosis and treatment. In such conditions, the responsibility falls on family members to discuss with health providers and make important decisions related to the care of their loved one [18].

This study used several robust data collection tools derived from previous studies (especially those conducted in ICUs) [4, 10, 19] to determine the level of satisfaction and suggestions made by the patients and their families.

Moreover, the observation of each ICU was carried out by three individuals at different times of the day to ensure objectivity and avoid bias [20]. Strict training on both observation and use of the interview questionnaire was provided to members of NKH. This allowed them to participate in data collection and ensured technical sustainability and replicability. Observation results provided invaluable information, which was the gate to the subsequent phases of the study.

In other words, feedback in this study was obtained through multiple methods, namely the analysis of the observation results, patient and family questionnaires, and interviews with the patients/family members. This feedback can be used in prioritizing subsequent improvement initiatives. This concurs with the methods of Bonilla et al., Buttigieg et al., Ali Akram et al., and AbuZina et al. in their studies [21–24].

From the quantitative findings of the study, the patients and family members were both satisfied with these items: continuous availability of nurses to respond to patient needs, courteousness of the staff, staff listening and responding to inquiries, and prompt response to patient needs. These findings go in line with the study done by Haave et al. where the family members were very satisfied with the nursing care, the courteousness of the staff, the

time available for getting answers to their questions, and the willingness of ICU staff to reply to these questions [25]. The family's demand for information about their ICU patient's condition, care, and therapy is emphasized in several previous studies [26, 27]

Also, among the top causes of participants' satisfaction was the presence of enough privacy for their patient relatives during the visiting hours. On the contrary, other studies that measured families' satisfaction in ICU [4, 28, 29] found that privacy needed to be improved.

On the other hand, the top cause that led to patient and family dissatisfaction was that family members were sent to buy medications/supplies (out-of-pocket) due to their lack of availability in the hospital. This goes hand in hand with the qualitative findings where the provision of enough medications/supplies ranked the top suggestion. Likewise, recurrent drug deficiency was the commonest cause of dissatisfaction by a great percentage of patients in a study done by Zidan, so they had to buy their medications from private pharmacies out of their pockets [16].

The second cause of dissatisfaction was the unexplained high service price. This is consistent with the qualitative findings in which reducing bills is among the top suggestions for improvement. Of course, this affects the economic status of the patients and families and may lead to impoverishment due to health expenditures. The findings are similar to that of Eltaybani, who found that the high out-of-pocket expenses for the service were significantly correlated with low satisfaction [14].

In Egypt, attempts to set up universal health insurance have already been started to expand healthcare coverage to include those who are not covered and those who cannot pay the annual insurance contributions [30].

The next cause of low satisfaction was the limited number of seats and waiting areas dedicated to the families inside the ICU. A question is raised here if this was intended by the NKHICU. This was likely to oblige the family members to attend exactly at the appointed time for the visit. This also would reduce the crowding and noise in the ICU vicinity, which may compromise the medical team's performance and hinder the smooth movement of trolleys and medical tools. However, the NKH authorities have already saved convenient amenities and enough seats outside the ICU vicinity to ensure the comfort of families. In line with many studies, inconvenient waiting areas caused considerable dissatisfaction for ICU families [18, 25, 28, 29]. Unfortunately, this means they do not realize that their presence in large numbers for long periods in the ICU vicinity will constitute an undue burden on the ICU facilities.

It also clarifies why the duration of the visit is a fixed one hour. This is called the limited visiting policy. There has been a debate about the value of a limited visiting policy versus the open-visiting one (i.e., visits extend for long times). [31]. While the open visiting assures the patient and ameliorates his fears, it has some drawbacks. It compromises the patient's need for rest, disturbs medical care, and increases the risk of nosocomial infections [32]. This explains the commitment of NKHICU to the limited visiting policy.

LIMITATIONS OF THE STUDY

Due to the selection of participants conveniently from one setting, the generalizability of the current findings to other ICU settings is unlikely.

CONCLUSION

Feedback from patients and their families is crucial to guide quality improvement in the ICU. Providing adequate drugs/supplies, reducing bills, and addressing patients' and families' concerns will improve their satisfaction with services.

RECOMMENDATIONS:

Ensure a reliable, effective feedback system for patients and families to target their concerns and guide quality improvement based on this feedback. Stakeholders, nurses, and physicians should consider aspects of low satisfaction and implement strategies to solve them.

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RESEARCH ARTICLE

AN ANALYSIS OF SERVICE EXPERIENCE AND PERCEIVED VALUE INFLUENCE ON PATIENT'S SATISIFICATION AT REGIONAL PUBLIC HOSPITALS IN SOUTH SULAWESI PROVINCE

Ardianti [1], Syahrir A Pasinringi [1], Fridawaty Rivai [1], Irwandy[1], A. Indahwaty Sidin[1], Yahya Thamrin[2], Andi Agus Mumang[3]*

1. Hospital Administration Study Program, Faculty of Public Health, Hasanuddin University, Makassar, South Sulawesi, Indonesia
2. Occupational safety and health department, Faculty of Public Health, Hasanuddin University, Makassar, South Sulawesi, Indonesia
3. Graduate School, Hasanuddin University, Makassar, South Sulawesi, Indonesia

Correspondence: ardiantiardiantiunhas@gmail.com

ABSTRACT

BACKGROUND:

The service experience and perceived value that occurs in every interaction between patient and service provider will influence the patient's satisfaction. This study aims to analyze the effect of service experience and perceived value on patient's satisfaction at Regional Public Hospitals in South Sulawesi, Indonesia.

METHODS:

The method used in this study was cross sectional by distributing questionnaires to 270 outpatients and 266 inpatients as respondents. Sampling was carried out by using proportional stratified random sampling technique from each participating hospital. Data were analyzed using multiple linear regression tests.

RESULTS:

The results showed that service experience had an effect on patient's satisfaction in inpatient care [β=0.598, t=3.163; p=0.002] and in outpatient care [β=0.13, t=2.89; p=0.004]. Perceived value had an effect on patient's satisfaction in inpatient care [β=0.323, t=1.709; p=0.04] and in outpatient care [β=0.108, t=2.391; p=0.017].

CONCLUSION:

Service experience and perceived value impact patient satisfaction.

KEYWORDS

Service experience, Perceived value, Patient's satisfaction

INTRODUCTION

Patient satisfaction with health care is an important component of organizational performance in the hospital environment [1]. Patient satisfaction refers to how great the expectation and demanded goals and preferences are when services are provided by health care providers [2]. When patients feel satisfied with the treatment, they will follow the doctor's instructions, be more loyal, have a positive impression, fewer complaints and enable higher profits, higher return rates and more patient references [3]. A previous study showed that satisfied patients tend to follow treatment instructions and medical advice because they are more likely to believe that treatment will be effective [4]. The ability of any organization to satisfy its customers is most easily realized when these expectations are managed to be consistent with product and process [5]. Based on previous studies, patient satisfaction is strongly influenced by service experience [6]. Meanwhile, service cues can affect satisfaction through the perception formed in each service experience [7].

Perceived value also affects patient satisfaction. Studies have shown that satisfaction is strongly influenced by perceived value [8,9]. Perceived value is one of the most important elements to gain competitive advantage and is considered as a significant predictor of satisfaction [10,11]. This is supported by Ali [12] who found that there is a unique correlation between perceived value and customer satisfaction. Perceived value plays an important role in increasing the level of patient satisfaction [13], which indicates that patient satisfaction will be higher if the perceived value and quality exceeds patient expectations [14]. Customer perceived value can be described as an evaluation to compare the perception of perceived value and the actual results of the purchase experience [15]. Meanwhile, Berry and his colleagues [16] stated that satisfaction comes from the perception that is formed in each service experience when there is interaction between customer and service provider. In interactions, customers do not evaluate the value at the purchase stage but at the consumption or service use stage [17]. This experience is influenced by sensory and emotional instructions that reveal a perception, either rational or emotional, and they influence satisfaction [16,18].

The Regional Public Hospitals in South Sulawesi Province has conducted a survey in inpatient and outpatient facilities in 2017-2019 and found that more than half of the total percent of patients felt satisfied (66.4% in Haji Regional Public Hospital, 68.9% in Labuang Baji Regional Public Hospital and 50.6% in Sayang Rakyat Regional Public Hospital). According to Kepmenkes No.129 of 2008 (Minister of Health Decree.), the minimum standard of patient satisfaction should be ≥ 90%. Therefore, the results of the survey reported did not meet the target criteria. However, it can still be concluded that the satisfaction felt by patients is quite high and considered. As mentioned earlier, there may be factors that can influence these results. Previous studies highlight that these factors need to be investigated in relation to patient satisfaction [7,17]. Patients will interact with the health service provider when they visit the hospital and experience the service and also have value-oriented interactions according to their needs. Therefore, we hypothesized that service experience and perceived value will positively affect the effectiveness of feeling satisfied by patients in hospital services. The objective of this study was to investigate the effect of service experience and perceived value on patient satisfaction at the Regional Public Hospitals in South Sulawesi.

METHODS

RESEARCH DESIGN AND LOCATION

This research was conducted at the inpatient and outpatient facilities of the Regional Public Hospitals in South Sulawesi (i.e., Haji Hospital, Labuang Baji Hospital and Sayang Rakyat Hospital). The type of study used is an analytical observational study with a cross-sectional design.

POPULATION AND SAMPLE

The population in this study were patients who underwent treatment at inpatient and outpatient facilities of the Regional Public Hospitals in South Sulawesi. The sample was calculated according to the formula of Isaac and Michael [19].

$$s = \frac{\lambda^2 . N . P . Q}{d^2(N-1) + \lambda^2 . P . Q}$$

s = sample
λ = Chi-square Table
N = Population
P = proportion probability (P=0.5)
Q = proportion probability (Q=0.5)
d = degree of freedom

Therefore, the total sample was 270 outpatients and 266 inpatients. The sample was selected by proportional stratified random sampling [19], see Table 1.

TABLE 1. TOTAL OF SAMPLE AT REGIONAL PUBLIC HOSPITAL IN SOUTH SULAWESI PROVINCE

Hospitals	Sub-population	Sample of Outpatients	Sub-population	Sample of Inpatients
Haji Regional Public Hospital	25163	79	10537	155
Labuang Baji Regional Public Hospital	43069	135	5368	79
Sayang Rakyat Regional Public Hospital	17836	56	2186	32
Total	86068	270	18091	266

INSTRUMENT AND PROCEDURE

The questionnaire used was a modified questionnaire from several previous studies that related to service experience (e.g., the nurse provides the information that I need; α = 0.889), perceived value (e.g., hospital services are well organized; α = 0.891) and patient's satisfaction (e.g., procedure for hospital service is very easy; α = 0.933) [9,17,20,24,26].

Data collection was conducted by distributing questionnaires to patients after approval for participation and signed written informed consent. All research procedures have received approval from Health Research Ethics Committee (KEPK), Faculty of Public Health, Hasanuddin University, with letter number: 11907/UN4.1.4.1/TP.01.02/2002.

DATA ANALYSIS

Data were collected and analyzed using IBM's SPSS for Windows software, version 24.0 (IBM Corp., Armonk, NY, USA).

Frequencies and percentages were applied for univariate analysis. The effect of independent variables was analyzed at the multivariate level using multiple linear regression by controlling age, sex, education, occupation, income and type of finance. The results of multiple regression were performed using adjusted R-squared and coefficient standard (β). The Adjusted R-squared considers the number of independent factors used to predict the target variable. Meanwhile, the beta coefficient can be used to compare independent variables directly in order to ascertain which has the greatest impact on the dependent variable. The test was considered significant when the p-value is <0.05 (α=0.05) at a 95% level of confidence.

RESULTS

Tables 2 and 3 demonstrate demographic findings from the participants and service experience.

TABLE 2. DISTRIBUTION OF RESPONDENT'S CHARACTERISTICS IN PATIENTS AT REGIONAL PUBLIC HOSPITAL IN SOUTH SULAWESI

Respondent's Characteristics	Inpatient care	Outpatient care
	n (%)	n (%)
Age category		
17-25	88 (33.0)	89 (33.0)
26-35	96 (36.0)	104 (39.0)
36-45	74 (28.0	67 (25.0)
46-55	8 (3.0)	10 (4.0)

Respondent's Characteristics	Inpatient care	Outpatient care
	n (%)	n (%)
Sex		
Male	82 (31.0)	89 (33.0)
Female	184 (69.0)	181 (67.0)
Education		
Junior High School	7 (3.0)	3 (1.0)
Senior High School/Vocational School	204 (77.0)	198 (73.0)
Associate's Degree	17 (6.0)	26 (10.0)
Bachelor	31 (12.0)	36 (13.0)
Others	7 (3.0)	7 (3.0)
Occupation		
Civil Servant	68 (26.0)	50 (19.0)
Private Employee	60 (23.0)	75 (28.0)
Entrepeneur	78 (29.0)	93 (34.0)
Unemployed	32 (12.0)	37 (14.0)
Others	28 (11.0)	15 (6.0)
Income		
No Income	32 (12.0)	31 (11.0)
Rp < 1.000.000	73 (27.0)	76 (28.0)
Rp 1.000.000 - Rp 2.500.000	97 (36.0)	87 (32.0)
Rp >2.500.000 - Rp 5.000.000	45 (17.0)	56 (21.0)
Rp > 5.000.000	19 (7.0)	20 (7.0)
Type of finance		
General	22 (8.0)	26 (10.0)
Social Health Insurance	220 (83.0)	230 (85.0)
Other Insurances	24 (9.0)	14 (5.0)
Total	**266 (100)**	**270 (100)**

Data are presented as frequencies (n) and percentages (%).

Table 2sets out that most respondents were in the age of 26-35 years, with 96 people as inpatient (36.0%) and 104 people as outpatient participants (39.0%). Women were most common participants, with 184 (69.0%) inpatients and 181 (67.0%) outpatients. Most of the participants had completed their high school/vocational training - 204 (77.0%) inpatients and 198 (73.0%) outpatients; and worked as entrepreneurs (78 inpatients or 29.0% and 93 outpatients or 34.0%). The income of inpatient and outpatient groups were high in the range of Rp 1,000,000 - Rp 2,500,000 (97(36.0%) and 87(32.0%)) and had a type of finance social health insurance (220(83.0%) and 230(85.0%)).

MULTIVARIATE ANALYSIS

Table 3 shows that the adjusted R-squared values for inpatients and outpatients were 0.100 and 0.134, which means that the variables of service experience and perceived value influence inpatient satisfaction by 10% or slightly more. Meanwhile, standardized coefficient (β) value of service experience and perceived value was high

in inpatients than in outpatients, but overall had significant p-value ($p<0.05$). This means that the increase of service experience and perceived value significantly affected the high patient satisfaction for 0.5 times and 0.3 times in inpatients, but not so high in outpatients (i.e., only 0.1 times). However, the results confirmed the significant effect of service experience and perceived value on patient satisfaction.

TABLE 3. THE EFFECT OF SERVICE EXPERIENCE AND PERCEIVED VALUE AT REGIONAL PUBLIC HOSPITAL IN SOUTH SULAWESI PROVINCE

Type of Service	Variable	Adjusted R-squared (R^2)	Standard Coefficients (β)	t	p-value
Inpatient Care	Service Experience	0.100	0.598	3.163	0.002
	Perceived Value		0.323	1.709	0.040
Outpatient Care	Service Experience	0.134	0.13	2.89	0.004
	Perceived Value		0.108	2.391	0.017

Dependent variable: Patient satisfaction

Data analyzed using multiple linear regression by controlling for age, sex, education, occupation, income, and type of finance

DISCUSSION

Service experience can be gained in any interaction between the patient and the service provider. Customers always have experience when they interact with a company [7]. The results of the multiple linear regression test at the Regional Public Hospitals in South Sulawesi province showed that there is an influence between service experience and patient satisfaction. This means that the level of patient's satisfaction is influenced by the experience felt while receiving the service. If the patient's overall experience is not good enough, then the patient will feel less satisfied. Conversely, if the overall experience is good, the patient will be satisfied.

The results of this study are consistent with the study conducted by Retnaningsih [22], who found that there was a significant influence between service experience and customer satisfaction at the inpatient facility of South Sulawesi Regional Public Hospital. The results of this study are also consistent with the study conducted by Bea [20] who found that there is also a significant influence between service experience and customer's satisfaction at the Inpatient Installation of South Sulawesi Regional Public Hospital. Therefore, the hospital should maintain a satisfied patient or customer service experience. The hospital should maintain a satisfied service to get positive experiences from patients. The more satisfied patients are with their experience in the service operation system, the more competitive facitliies are [23]. The hospital needs to improve the service operation by objectively mapping the patients' service experience from their perspective. Paying more attention to customers' service experience will improve the effectiveness of service operation [23].

This study also found that perceived value significantly affects patient satisfaction in regional public hospital in South Sulawesi province. This issue shows that the level of patient satisfaction is influenced by perceived value. If the patient perceives a bad value, the patient would be dissatisfied. Conversely, if the patient perceives good value, the patient would be satisfied. Perceived value is defined as the consumer's overall evaluation of the use of a product or service based on the perception of "what is received" or/and "what is given". Zeithaml et al. [24] found that some consumers receive value in exchange for the price paid. The results of multiple linear regression showed that there is an influence between perceived value on patient satisfaction.

The results are consistent with Rahmani et al. [25] who found that there is a significant relationship between perceived value and patient satisfaction. Milfelner and colleagues [26] also found that perceived value has a significant impact on customer satisfaction. Perceived value is one of the most important elements to gain competitive advantage and is considered a significant predictor of satisfaction.

Furthermore, Wu et al. [8] found that perceived value has a positive effect on patient satisfaction. In addition, there are several studies that also show that satisfaction is strongly influenced by perceived value [9,10,27]. For example, Surydana [14] stated that perceived value has a significant effect on patient satisfaction because patient satisfaction can build a long-term relationship. This indicates that satisfaction will be higher if the perceived value exceeds the patient's expectation. Therefore, because the customer is value-oriented, the hospital should know the concept of perceived value and the patient's tendency to go to the hospital. Park et al. suggest that customers' perceived value is influenced by their needs [17]. In addition, high customer perceived value guarantees customer satisfaction and customer loyalty.

A limitation of the current study is that the result represented only the government hospitals. A different situation could be found when compared with private hospitals. Therefore, caution should be taken in generalizing these results. Another possible limitation is that other variables not included in the study may also influence patient satisfaction.

CONCLUSION

From the results of the study, it can be concluded that there was an effect of service experience and perceived value on patient satisfaction. By improving the quality of service experience and perceived value can increase patient satisfaction in regional public hospital in South Sulawesi province. This means that patients place more emphasis on service experience, although the role of perceived value also determines patient satisfaction. In understanding this relationship, the hospital should provide a strong focus in providing the best service experience and increasing the perceived value of hospital service, therefore, can achieve patient satisfaction according to established standards.

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RESEARCH ARTICLE

THE IMPACT OF MARKETING MIX AND PATIENT EXPERIENCE ON PUBLIC PATIENT LOYALTY IN HOSPITALS: SATISFACTION AS AN INTERVENING VARIABLE

Livia Zebua [1], Irwandy [1], Syahrir A Pasinringi [1], Fridawaty Rivai [1], Indahwati Sidin [1], Andi Agus Mumang[2]

1. Hospital Administration Study Program, Faculty of Public Health, Hasanuddin University, Makassar, South Sulawesi, Indonesia
2. Graduate School of Hasanuddin University, Makassar, South Sulawesi, Indonesia

Correspondence: livia1408@gmail.com

ABSTRACT

BACKGROUND:

In maintaining patient loyalty, one of the marketing strategies that can be carried out is the use of Marketing Mix. Marketing Mix can improve the perceived quality of patient discernment, namely the patient assessment of a service. If the patient's perception on the quality of services provided by the hospital is good, then the patient's experience on the hospital will be positive. This condition can increase patient satisfaction which continues in the formation of patient's loyalty. This study aims to analyze the effect of Marketing Mix and patient's experience through satisfaction on patient loyalty.

METHODS:

This study is a quantitative study using an observational approach with a cross-sectional study design. The sample in this study was 358 general patients at Stella Maris Hospital, Makassar, Indonesia using total or purposive sampling. The instrument used in data collection is a questionnaire that has been tested for validity and reliability. Multivariate data analysis used path analysis.

RESULTS:

There was direct effect of Marketing Mix (β=2.218, p=0.027) and indirect effect through satisfaction (β=2.417, p=0.016) on loyalty. There was no direct effect of patient's experience (β=0.398, p=0.691). However, the indirect effect was very significant through satisfaction (β=10.651, p<0.001). In addition, there was also direct effect of satisfaction on loyalty (β=5.161, p<0.001).

CONCLUSION:

There is a direct effect of the Marketing Mix on patient loyalty. Patient satisfaction is a significant intervening factor for both the Marketing Mix and the patient's experience, which in turn affects patient loyalty.

KEYWORDS

Marketing Mix, patient's experience, loyalitas, satisfaction, hospital.

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INTRODUCTION

Customer loyalty is a key factor in dominating business competition. Loyal customers can promote the service and remain committed to the product through regular, long-term buying behavior. It is important to maintain customer loyalty through excellent service and product quality [1].

The high competition among hospitals makes them compete to increase patient loyalty so that they do not move to other hospitals. It will indirectly affect the hospital in maintaining market share, so a hospital must work hard in maintaining patient loyalty. For this reason, the effort to maintain patient loyalty is an important thing that must always be carried out by the hospital. Patient loyalty is based on patient satisfaction and behavior. Patient's loyalty to a hospital is a parameter for the success of the process of health services [2].

Marketing Mix is one of marketing strategies to share information widely, introduce a product of goods and services, persuade consumers to give and even create personal preferences for the image of product. Therefore, the Marketing Mix is considered as one of the most potential strategic elements in selling products. Titirlolobi and his colleagues [3] stated that Marketing Mix can improve the patient's perceived quality, namely the patient's evaluation of the service. If the patient's perception of the quality of services provided by the hospital is good, then the patient's experience of the hospital will be positive. This condition can increase patient satisfaction which continues in the formation of patient loyalty.

Marketing Mix can also affect customer loyalty. Marketing Mix is a combination of four or more variables or activities that become the core of company marketing system. The Marketing Mix commonly used by hospitals in Indonesia is 7Ps, namely: product, price, place, promotion, people, physical evidence and process. From the patient's point of view, Marketing Mix is a way to solve patient problems, costs that must be paid by patients, getting pleasant and comfortable service as well as good communication from the hospital to customers [4].

Every patient desires high-quality health service because healthcare is a fundamental need. Quality healthcare is achieved when the services provided meet the expectations of the customers, resulting in satisfaction. Currently, users of public health services not only seek healing but also evaluate their experience during treatment [5].

Over the past four years, Stela Maris Hospital (RSSM) Makassar, Indonesia has experienced a decrease in patient visits for inpatient care. This decrease may be attributed to low patient loyalty and interest in hospital services. As consequence, affect the general finance of the hospital. It is important to note that patient decisions to use inpatient care at Makassar RSSM remains low. To address this issue, the hospital may need to focus on improving patient loyalty and satisfaction.

Therefore, the researchers aimed at conducting analysis on the influence of Marketing Mix and patient experience through satisfaction on general patient's loyalty at inpatient facilities of Stella Maris Hospital.

METHODS

LOCATION AND RESEARCH PLAN

This study was conducted at Stella Maris Hospital Makassar. The type of research used is analytic observational with cross sectional design.

POPULATION DAN SAMPLE

The population in this study consists of general inpatients at this hospital. The participant sample was enrolled using total sampling, with 358 participating patients included.

INSTRUMENT AND PROCEDURE

The instrument used in data collection is a questionnaire which consist of Marketing Mix questionnaires, patient's experience, satisfaction and loyalty. All questionnaires were tested for validity and reliability using bivariate Pearson correlation and Cronbach's alpha (α). Marketing Mix is a hospital activity to design marketing strategies. Patient experience is an entire process of assessing services that have been obtained by patients or their families. Loyalty is the formation of a consumer's attitudes and behaviors toward the purchase and use of a product as a result of the consumer's experience with the service.

Data were collected through face-to-face interviews with respondents. Data collection was carried out after the respondents stated their agreement by signing a written informed consent. The instruments and procedures in this study have received ethical approval from the Ethics Committee of the Faculty of Public Health at Hasanuddin

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University, Makassar, South Sulawesi, Indonesia (number 8064/UN4.14.1/PT.01.02/2022).

DATA ANALYSIS

Data were analyzed using IBM SPSS (version 25) and SmartPLS (version 3.2.3). Univariate and bivariate analyses were used to obtain general characteristics and explore associations between variables. A Chi-square test was performed for bivariate analysis. Path analysis was used to conduct the multivariate analysis. The hypotheses developed for this study are listed in Table 1.

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TABLE 1. PATH HYPOTHESES

Path Hypotheses	Definition
Path 1	There is direct relation between Marketing Mix and Loyalty
Path 2	There is direct relation between patient's experience and Loyalty
Path 3	There is indirect relation on Marketing Mix through satisfication on loyalty
Path 4	There is indirect relation on patient expereience through satisfication on loyalty
Path 5	There is direct relation between satisfication and loyalty

RESULTS

Table 2 shows the frequency distribution based on the dominant gender was male which is for 196 people (54.7%). The characteristic based on dominant age was at age > 55 for 161 people (45.0%). The characteristic based on dominant recent education with the education level of Senior/Vocational high school for 148 people (41.3%). The characteristic based on dominant occupation the is entrepreneur for 194 people (54.2%). The most characteristic based on distance >5km is 228 people (63.7%). The characteristic based on dominant visits is the number of visits <3 times for 200 people (54.7%).

TABLE 2. DISTRIBUTION OF PATIENT BASED ON RESPONDENTS' CHARACTERISTIC

Characteristics	Sample of Study	
	Total (n=358)	Percentage (%)
Age		
17-25 years old	16	4.5
26-35 years old	36	10.1
36-45 years old	96	26.8
46-55 years old	49	13.7
>55 years old	161	45.0
Gender		
Male	196	54.7
Female	162	45.3
Last education background		
Elementary School	48	13.4
Junior High School	48	13.4
Senior/Vocational High School	148	41.3
Associate degree	66	18.4
Bachelor	48	13.4
Job		

Characteristics	Sample of Study	
	Total (n=358)	Percentage (%)
Civil Servant	16	4.5
Private Employee	82	22.9
Enterpreneur	194	54.2
Jobless	66	18.4
Total of Visits		
<3 Times	200	54.7
Unlimited visit	158	45.3

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TABLE 3. FREQUENCY DISTRIBUTION BASED ON THE CATEGORY IN VARIABLE PATIENT'S EXPERIENCE, MARKETING MIX, PATIENT SATISFACTION AND PATIENT'S LOYALTY AT STELLA MARIS HOSPITAL MAKASSAR IN 2022

Variables	Sample of Study	
	Total (n=358)	Percentage (%)
Marketing Mix		
Good	200	55.9
Not really good	158	44.1
patient's experience		
Good	174	44.1
Not really good	184	55.9
Satisfaction		
Sastisfied	194	54.2
Not really satisfied	164	45.8
Loyalty		
High	189	52.8
Low	169	47.2

Source: Primary Data, 2022

Table 3 shows that the percentage of respondents who stated that the Marketing Mix was in the good category (55.9%), the patient's experience was in the good category (44.1%), the satisfaction category was satisfied (54.2%) and patient's loyalty in the high category (52.8%).

Table 4 shows that there was significant difference between Marketing Mix (p<0.001) and patient experience (p<0.001) with respect to patient satisfaction.

Table 5 shows that there was significant difference between Marketing Mix (p<0.001) and patient's experience (p<0.001) with loyalty.

Table 6 shows that there was difference in patient satisfaction (p<0.001) on loyalty.

TABLE 4. THE ASSOCIATION BETWEEN MARKETING MIX AND PATIENT'S EXPERIENCE ON PATIENT SATISFACTION

Variables	Satisfaction				Total		p
	Satisfied		Not really satisfied				
	n	%	n	%	n	%	
Marketing Mix							
Good	148	74.0	52	26.0	200	100.0	<0.001
Not really good	46	29.1	112	70.9	158	100.0	
patient's experience							
Good	159	91.4	15	8.6	174	100.0	<0.001
Not really good	35	19.0	149	81.0	184	100.0	

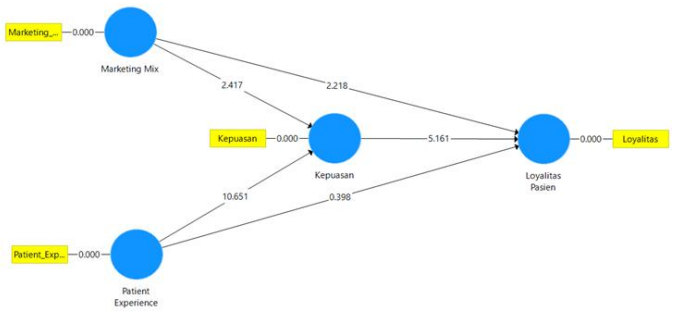
TABLE 5. THE ASSOCIATION BETWEEN MARKETING MIX AND PATIENT'S EXPERIENCE ON PATIENT'S LOYALTY

Variable	Loyalty				Total		p
	High		Low				
	n	%	n	%	n	%	
Marketing Mix							
Good	149	74.5	51	25.5	200	100.0	<0.001
Not really good	40	25.3	118	74.7	158	100.0	
patient's experience							
Good	159	91.4	15	8.6	174	100.0	<0.001
Not really good	30	16.3	154	83.7	184	100.0	

TABLE 6. THE ASSOCIATION BETWEEN SATISFICATION AND PATIENT'S LOYALTY

Satisfication	Loyalitas				Total		p
	High		Low				
	n	%	n	%	n	%	
Satisified	178	91.8	16	8.2	194	100.0	<0.001
Not really satisfied	11	6.7	153	93.3	164	100.0	

FIGURE 1. ANALYSIS OF ASSOCIATION PATH AMONG MARKETING MIX VARIABLES, PATIENT'S EXPERIENCE, SATISFACTION AND LOYALTY.



There was direct effect of Marketing Mix (β=2.218, p=0.027) and indirect through satisfaction (βmarketing→satisfication =2.417, βSatisfication→loyalty=5.161, p=0.016) on loyalty. There was no direct effect of patient's experience (β=0.398, p=0.691) on loyalty. However, indirect effect was very significant through satisfaction (βexperience→Satisfication =10.651, β→loyalty =5.161, p<0.001). On the other hand, there was also direct effect of satisfaction on loyalty (β=5.161, p<0.001 (Figure 1).

DISCUSSION

Marketing Mix has great effect on consumer action in using a product or service. This study found direct effect of Marketing Mix on patient satisfaction and loyalty. This was supported by study of Sudarto [6] who found that Marketing Mix has positive and significant effect on patient satisfaction. This study is also in line with research conducted by Yuliantine et al. [7] which shows Marketing Mix has significant effect on patient satisfaction. Study conducted by Junaidi and Sulistiadi [8] found that Marketing Mix component has significant effect on loyalty. Thus, the strategy formulated by RSSM Makassar has influenced the perception of its target market (i.e., patients) so that they decide to visit to get health services at RSSM and the elements of Marketing Mix (e.g., customer solution, customer cost, convenience, and communication) based on what has been applied in RSSM meets the perception and patient expectation so it created customer satisfaction. Furthermore, Leawaty and Sulistiadi [9] states that the purpose of the Marketing Mix is to facilitate transactions and outpatient or inpatient visits by providing good services. Good services lead to patient satisfaction, which in turn fosters loyalty to the company's products.

Furthermore, there is indirect association between Marketing Mix and loyalty through satisfaction. The result of this study is supported by Utami and Achmad [10], which shows that there is a positive effect of Marketing Mix on loyalty through customer satisfaction. MMarketing Mix is a set of tools that marketers can use to form the characteristic of services offered to customers. Marketing Mix is expected to increase consumer assessment of product or service. If the consumer's perception on the quality of service provided by the hospital is good, the consumer's image of the hospital will be positive. This condition can increase customer or patient satisfaction. The impact of patient satisfaction is customer loyalty which is consumer behavior as a result of the service.

There is direct effect of patient experience on patient satisfaction. The service experience is considered to be good by patients where they get the fact that the services can meet the patient's needs to be satisfied. This satisfaction starts from the patient's experience when the acceptance comes at the first arrival until the patient's experience when they leave the hospital. To get customer satisfaction, service providers must first try to always provide positive experiences for customers. However, there is no direct effect of patient's experience on patient loyalty. This is supported by a previous study from Gomoi et al. [11] which claims that customer experience on customer loyalty does not have a direct effect. Research conducted by Pamungkas et al. [12] also shows that customer experience has no significant effect on customer loyalty. However, customer experience is expected to have a significant effect on the formation and maintenance of customer loyalty. Madeleine and Pullman [13] found that due to the experience of good quality then that can create loyalty. A study conducted by Utari [14] shows that patient experience affects patient loyalty.

However, patient experience was found to have an indirect effect on loyalty through patient satisfaction. This is supported by Ray et al. [15] in their study which also revealed that the patient's experience on satisfaction during hospitalization determines more patient loyalty than the experience of satisfaction experienced by patients on outpatient care. The patient experience obtained after getting the service is possibly able to affect the level of patient satisfaction. The more positive experience, the more patient satisfaction will increase [16]. This experience can lead to customers feelings of pleasure so that it affects customer satisfaction positively, which will have an impact on loyalty. Customer experience is one of the personal factors from the actors or users of services and products.

Furthermore, there is also an effect of satisfaction on patient's loyalty. Result of a study which supports this is from Abdullaeva [17] which shows that there is a significant association between satisfaction and loyalty. Also, research conducted by Fatima et al. [18] shows that there is significant and positive effect between patient satisfaction and loyalty at six private hospitals in the capital city, Islamabad, Pakistan. Hospitals are required to always take care of consumers by improving the quality of service

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so that customer satisfaction will increase. Patient satisfaction is the goal of successful marketing programs and the implementation of health services. This affects the patient's desire to return for treatment in the same place. This has an impact on the growth of patient loyalty to healthcare providers, making it easier to attract new customers and increase the efficiency of healthcare delivery. Loyalty is a tangible form of the patient's willingness to reuse services which adds strength and positive attitude towards the hospital [19].

This study has limitations. The study was conducted in a single hospital, and caution should be exercised in generalizing the results to all hospitals in Indonesia. There may be other potential influencing factors that are directly or indirectly related to patient loyalty that were not investigated in the current study.

CONCLUSION AND RECOMMENDATION

There is a direct effect of the Marketing Mix on patient loyalty. Patient satisfaction is a significant intervening factor for both the Marketing Mix and the patient's experience, which in turn affects patient loyalty. It is recommended that hospital management should encourage all staff or health care providers to continue to pay attention to the patient's experience with the service. In this way, patient satisfaction and loyalty can be maintained and increased.

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RESEARCH ARTICLE

INFECTIVE VERSUS NON-INFECTIVE RESPIRATORY ILLNESS ADMISSIONS: COMPARATIVE COST ANALYSIS IN A TERTIARY HOSPITAL IN MALAYSIA

Kiran Ganesh Balakrishnan[1], Mohd Rizal Abd Manaf[1], Mohd Rohaizat Hassan[1] Kamarul Imran Musa[2], Azizul Rahman Mohamad Jamil[1]*

1. Department of Public Health Medicine, Faculty of Medicine, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia
2. Department of Community Medicine, School of Medical Sciences, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia

Correspondence: mrizal@ppukm.ukm.edu.my

ABSTRACT

BACKGROUND:

Severe Acute Respiratory Infection (SARI) that is mainly caused by the Influenza virus, poses a significant public health threat, demanding timely detection and preventive measures. This study assesses the financial implications of managing two distinct respiratory conditions: SARI and Acute Exacerbation of Bronchial Asthma (AEBA).

METHOD:

Data were collected for 100 patients, with 50 cases of SARI and 50 cases of AEBA, admitted to Hospital Canselor Tuanku Muhriz (HCTM) from July to December 2022. Cost analysis was conducted from a provider perspective, considering factors such as building, asset, emolument, overhead, utility, medication, consumables, and laboratory and imaging expenses.

RESULTS:

The study revealed that the average total cost of treating SARI patients was RM 1,587.11 ($US334.80), significantly higher (30.7%) than AEBA patients at RM 1,214.41 ($US256.18). This was mainly due to the acute and severe nature of SARI, requiring more intensive medical interventions, potentially leading to complications and greater strain on healthcare resources. The study highlighted the economic challenges posed by SARI, provided valuable insights for resource allocation and public health planning. The study's limitations include retrospective data collection and potential underestimation of actual costs due to top-down costing methodology.

CONCLUSION:

SARI, especially in the elderly population, leads to substantial healthcare costs and economic impact. Effective preventive measures, such as vaccination, are crucial in reducing the burden of influenza-related illnesses. Health financing plays a vital role in addressing communicable diseases and ensuring the well-being of the population.

KEYWORDS

influenza; hospital management; health financing; cost analysis

BACKGROUND

Severe Acute Respiratory Infection (SARI) is an emerging respiratory infection diagnosis, which is currently closely linked to COVID-19. According to the World Health Organisation (WHO), SARI is diagnosed when an individual has an acute respiratory infection with symptoms within 10 days after presentation, a cough, a fever, and hospitalisation [1]. By using these criteria for diagnosis, global influenza surveillance is standardised, although not every case will be detected. Influenza is a primary contributor to SARI, including pneumonia, and is linked to significant illness and death on a global scale. The elderly population is especially susceptible to influenza and has an increased likelihood of experiencing serious consequences, such as pneumonia, that can result in hospitalisation and mortality [2,3]. This might lead to increased healthcare expenses as a result of the requirement for intensive care and hospitalisation [4].

SARI is often compared to acute exacerbation of bronchial asthma (AEBA) which is a non-infective respiratory condition. While both SARI and AEBA are respiratory conditions, their preventive measures differ. SARI prevention focuses on general hygiene, vaccination and infection control; whereas AEBA prevention revolves around managing asthma effectively and avoiding specific triggers that can lead to exacerbations [1]. The cost of admission for influenza in the United States (US) was estimated to be $US8,330 for hospitalised patients aged 65-84 years old which was mainly due to their prolonged stay in hospital [5]. The annual per-person medical cost of asthma in the US was $US3,266, with $US529 for hospitalizations and $US105 for emergency room care [6].

An increasing rate of influenza infection can have a significant impact on public health, healthcare systems and the economy; primarily due to the associated rise in admissions for respiratory complications, especially SARI [2,7]. This leads to some serious consequences such as increased in hospital admissions, strain on healthcare resources, higher morbidity and mortality rates, increased healthcare costs, healthcare financing challenges and economic impact [2,8]. The function of health financing is of utmost importance to effectively addressing and the management of communicable illnesses. Communicable diseases encompass a range of disorders that possess the ability to be transmitted from one individual to another. Examples of such diseases include HIV/ AIDS, tuberculosis, malaria, COVID-19, and a variety of vaccine-preventable disease. The importance of health financing in combating communicable diseases include prevention and control, early detection and surveillance, research and development, health infrastructure, treatment and care, and emergency response [9]. The aim of this study is to assess the financial implications associated with the admission and management of two distinct respiratory conditions: SARI, which is infectious in nature, and AEBA, which is non-infectious.

MATERIAL AND METHOD

The study involved Hospital Canselor Tuanku Muhriz, Kuala Lumpur, Malaysia (HCTM) SARI and for AEBA patients from July 1 to December 31, 2022. Patients that were in the ICD-10-coded HCTM casemix database who were admitted for SARI and AEBA were in the sampling frame. 100 patients (50 SARI and 50 AEBA) were recruited by simple random sampling as they are representative of the patient population and there is limited variability among the SARI and AEBA patients [7]. All SARI and AEBA patients, irrespective of whether being primary or secondary diagnosis and severity of the illnesses, were included in the study sample. Relevant information was obtained from these patients' medical records in the Medical Record Department. This provider-based cost analysis focused on HCTM medical ward patients. All prices are in Ringgit Malaysia (RM) and $US Dollars afterward. The number of medical staff working on a patient (human resource), diagnostic procedures, medications, medical procedures, items used on patients in the Emergency Department (ED) and medical ward, and Average Length of Stay (ALOS) are collected from patient files. Data were entered into a Microsoft Excel spreadsheet for calculation.

Each patient's inpatient treatment costs were determined. The fee included the stay, bed occupancy, laboratory testing, imaging studies, and ED and medical ward items. Emolument costs were sourced from Public Services Commission of Malaysia's website [10], while procedural costs were from HTCM's Department of Finance which included capital costs. Medication and consumable costs were sourced from the Pharmaceutical Services Department, Ministry of Health Malaysia website and local public hospital statistics [11]. This study uses step-down and activity-based costing. Step-down costing is utilised when departments or activities pool resources to deliver a result. The ED and Medical Ward treat a variety of diagnoses and

undertake procedures. To estimate the cost, total expenditures were divided by a measure of chosen allocation parameters (number of patients admitted) to get the average cost per patient per admission. Capital (building, equipment over RM500 per unit) and recurrent (utilities, maintenance) expenditures were evaluated using this method. On the other hand, ABC costs analysis is calculated for individual activities namely direct manpower, investigations, consumables and medications [12].

HCTM building cost was computed using 26 years of life expectancy and 5% discount rate. A 14.375 annualization factor was employed. The building's value was proportional to the medical ward's floor space employed for studied activities [12]. The cost of an electrocardiogram (ECG) machine was discounted over 10 years at 5%. The annualization factor was 7.722. All healthcare workers who manage SARI or AEBA patients receive basic pay, bonuses, and allowances for the year. Time spent on important tasks like ward reviews and medical procedures determined the cost. Health care workers' gross salary was divided by 8640 to get their emolument cost per minute [12]. This assumes 18 working days per month, 8 hours per day, 60 minutes per day = 8,640 minutes. Consumables costs include all drug and non-drug purchases (medical procedure material, disposable gloves and other associated products). Utility expenditures are allocated to the activity's floor space and include water, power, telephone, waste management, and others. Finally, the total cost of therapy for each patient was computed to include all their expenses while in the HCTM Medical Department for SARI and AEBA diagnoses. SARI and AEBA patients' total costs were then compared.

This study was approved by the Ministry of Health Medical Research Ethics Committee and HCTM, Universiti Kebangsaan Malaysia Research Ethical Committee. Permission to use this secondary data for publication purposes was also obtained. No patient-identifiable information was recorded; thus, the confidentiality of each patient is maintained.

RESULTS

Patients in this study were admitted for either SARI or AEBA between 1 July and 31 December 2022 in HCTM. In total, there are 50 patients recruited who had SARI and 50 patients with AEBA. Patients' age, sex and ALOS were compared. It was found that patients' demographics and clinical characteristics to be statistically similar for both groups. This was evident for patient sex as both male and female have equal distribution between the two diagnoses. The mean age for SARI patients was 65 years whereas the mean age for AEBA patients was 45 years. The ALOS for AEBA patients were shorter compared to those who are diagnosed with SARI which are 3.5 days and 6.3 days respectively (Table 1).

TABLE 1 DESCRIPTIVE STATISTICS OF SARI AND AEBA PATIENTS

		SARI		AEBA	
		Mean	Frequency (%)	Mean	Frequency (%)
Samples			50 (50%)		50 (50%)
Age		65		45	
Sex	Female	26 (52%)		26 (52%)	
	Male	24 (48%)		24 (48%)	
Average length of stay (days)		6.29		3.53	

CAPITAL COSTS IN THIS STUDY

Capital costs are funding that a corporation uses to purchase, improve or maintain long-term assets to improve the company's efficiency or capacity. Building and equipment costs are the capital costs involved in this study. Since its inception in 1997, HCTM has undergone various construction projects, renovations and improvements. The present value of the existing buildings was estimated in this study by comparing them to the expenses made during the main project's construction in 1997. Because information on the construction costs of the existing structures was lacking and may no longer be applicable owing to ongoing restorations and improvements, this estimation was required. The HTCM building originally cost RM 50,355,907.98, and its current value was estimated using an

annualization factor of 14.375. The overall floor area of the HCTM building was 240,036 square feet, resulting in a construction cost of RM 14.59 per square foot. The building cost per day for a hospital facility patient is calculated by building cost per square feet (RM 14.59) multiply total medical ward floor space (5,352 square feet) divided by total medical inpatient days (56,056), which is equal to RM 1.39. The building cost of a SARI patient per admission is RM 8.76 (RM 1.39 x 6.29), while for AEBA patient is RM 4.92 (RM 1.39 x 3.53).

In general, the asset's cost was calculated using a five-year useful lifespan and a 5% discount rate. In all approaches, an annualization factor of 4.329 was used to calculate the asset's cost. The asset cost of SARI patient per admission is RM 12.23 (RM 1.94 x 6.29) while for AEBA patient is RM 6.79 (RM 1.94 x 3.53).

RECURRENT COSTS IN THIS STUDY

Recurring costs are the continuing expenses needed to run a firm in its chosen line of business. They appear on the income statement as indirect costs and factor into the balance sheet and cash flow statements. We considered salary, overhead, utility and maintenance, laboratory and imaging, medication, and consumables in our analysis. The labour cost was computed by adding the emolument cost of all contact time in minutes for each category of ED and medical ward staff. The ED's manpower costs include registration, admission clerking, blood taking, ECG, radiological tests, Medical Officer/Specialist evaluation, and Medical Department review before ward admission. The duration of each encounter was estimated using time-motion studies and patient records. In the medical ward, labour costs comprise specialist, medical officer, house officer, and nurse contact frequency. The medical ward labour cost was estimated by multiplying the emolument cost per minute by the average contact time and frequency. Reviewing clinical pathways in Emergency and Medical wards and patient records revealed average contact time and frequency. It was found that the average of labour cost for SARI was RM 332.07, meanwhile for AEBA was RM 325.65.

Overhead or administrative cost is the administration cost incurred while a patient is admitted in the hospital. The calculation is based on the total emolument of all staff of HTCM, including the non-clinical and administrative staff in 2022. The administration cost per day was calculated by total administration cost divided by total inpatient days. Then, the administration cost for SARI was calculated by multiplying 6.29 (ALOS SARI) and RM 5.17 (total administration cost per day), which was RM 32.54. The total administration cost for AEBA was found to be RM 18.26 (3.53 X RM 5.17).

The total cost of utilities and maintenance of the HTCM building in 2022 was RM 60,611,920.69 and the HCTM building floor space is 240,036 square feet. Therefore, the cost of utility and maintenance per square feet was calculated to be RM 252.51 (RM 60,611,920.29/ 240,036). The cost per patient is the calculated by using the inpatient days and ALOS for the respective conditions. The cost per SARI patient was RM 151.64 and for AEBA was RM 85.10. The medication cost was calculated and itemised. All drugs included in the management of SARI and AEBA patients were added. This includes oral medication, parenteral administration, nebulisations and metered dose inhalers. The medication that patients were discharged with was included. The medication cost for an average admission for SARI was RM 496.93 while AEBA was RM 392.42.

Consumables are referred to any non-asset item purchased by the hospital, directly utilised in providing medical service to patients. This includes syringes, needles, gloves, masks, intravenous drips, gauze and others. It was found that the consumables cost for an average admission for SARI was RM 200.15 while AEBA was RM 86.26. The laboratory and investigation costs were also itemised. Blood investigations, X-rays, swab PCR, culture & sensitivity testing and any other investigations were included. The laboratory and investigation cost for an average admission for SARI was RM 352.79 while AEBA was RM 295.01.

TOTAL COSTS IN THIS STUDY

The total cost of treating AEBA and SARI patients in this study was subjected to documentation of data in patient records obtained from the Medical Records Department of HCTM. From this study, the average total cost of treating patients with SARI is RM 1,587.11 ($US334.80), while the total cost of treating AEBA is RM 1,214.41 ($US256.18). The details of comparison between the two diagnoses are as Table 2 and the difference is RM 372.70 ($US78.62). The cost of an admission of a SARI patient is 30.7% more than that of AEBA patient. The difference between the admission cost was mainly from the medications, consumables and laboratory & investigations.

TABLE 2. DETAILS ON COST COMPARISON BETWEEN TREATING AEBA AND SARI PATIENTS

	SARI		AEBA	
	Ringgit Malaysia (RM)	$US (USD)	Ringgit Malaysia (RM)	$US (USD)
Capital Cost				
Building	8.76	1.85	4.92	1.04
Equipment (≥ RM500)	12.23	2.58	6.79	1.43
Recurrent Cost				
Emolument	332.07	70.05	325.65	68.70
Overhead	32.54	6.86	18.26	3.85
Utility & Maintenance	151.64	31.99	85.10	17.95
Medication	496.93	104.83	392.42	82.78
Consumables	200.15	42.22	86.26	18.20
Laboratory & Imaging	352.79	74.42	295.01	62.23
Total cost per patient	**1,587.11**	**334.80**	**1,214.41**	**256.18**

DISCUSSION

The mean age group for patients with SARI in this study is 65 years. This finding is consistent with other studies which has higher incidence of SARI among elderly [13–16]. The mean age of infective respiratory illness (SARI) is higher than non-infective (AEBA), which was also found in few other studies globally. The elevated prevalence of SARI in the older population can be attributed to the following factors associated with influenza such as age, pre-existing medical conditions and frailty. In developed nations, the majority of influenza-related deaths occur in individuals aged 65 or above [13,14]. Elderly individuals with pre-existing medical disorders, such as cardiovascular disease, diabetes, chronic respiratory disease, or cancer, have a higher propensity to acquire severe illness [17–19]. The elderly, who are fragile, are especially susceptible to influenza and have an increased likelihood of experiencing serious consequences, such as pneumonia, which can result in hospitalisation and death [15,20]. Healthcare professionals face a heightened risk of contracting influenza due to their frequent contact with patients, which also increases the likelihood of spreading the virus to vulnerable persons [1,9]. In this study, there were younger groups of patients as well, whereby, SARI mainly caused by influenza can result in more significant reductions in job productivity among employed [5].

Based on a study conducted in HCTM before previously, it was demonstrated that ALOS increased from 4.42 to 7.05 days, which was consistent with the higher level of sickness of illness [7]. Hence, it is proven that the estimated ALOS in this study for both asthma and SARI patients are nearly the same as the ALOS findings from other studies respectively [21,22]. A study found that the cost of SARI treatment and case management has increased over 3 years in 2016, 2017 and 2018 respectively in accordance with the severity and prevalence of the influenza illness [7]. Cost increments in HCTM was at 7.7% and 3.4% for the years 2017 and 2018, while for the other public hospitals in Malaysia reduced by 4.1% in the year 2017 but increased by 47.2% in the year 2018. This variation occurs due to the length of admission stay per case which was higher in 2018. This might be due to the increased availability and falling costs of molecular assays that made the Influenza Rapid Test kits more accessible and started to be used widely in 2018 [7].

Influenza can result in increased treatment expenses, strain on hospital funding, and resource utilisation, resulting in an economic impact. The subsequent search results offer valuable insights into the financial impact of influenza. A study carried out in South Africa found that SARI was significantly underestimated for the overall economic and health impact of influenza-related illnesses [8]. An investigation conducted in multiple centres in Colombia suggested that SARI caused by influenza imposes a significant economic burden on patients and their families. The direct medical costs per patient among senior individuals were three times greater than the median [23]. A study done in India found that hospital-based surveillance for SARI identified two possible situations of under-reporting which were non-SARI hospitalisation (patient admitted with SARI as secondary diagnosis and was not included in SARI surveillance data) and severe SARI

cases where patients refused hospitalization and defaulted on treatment [24]. In this study involving HCTM, all SARI patients, irrespective whether SARI is a primary or secondary admission diagnosis, were included as study samples. A retrospective assessment done in China assessed the economic impact of outpatient visits and hospitalisations related with influenza. However, the estimation of the economic burden associated with influenza in older people may not be accurate [25].

The influenza vaccination rate in Kuala Lumpur and Malaysia is very low at only 3%, as compared to South Korea being 84.4% (one of the highest worldwide) and Thailand being 15-20% for adults more than 65 years of age [9]. Vaccination is particularly crucial for individuals who are at a heightened risk of experiencing complications from influenza, as well as for those who reside with or provide care for such individuals. In healthy people, the influenza vaccine offers protection, even if the spreading viruses do not precisely match the viruses included in the vaccine. However, among the elderly, influenza vaccination may be less effective in preventing illness but reduces severity of disease and incidence of complications and fatalities [1,22]. The COVID-19 pandemic, H1N1 and other outbreaks of respiratory illnesses such as SARI impose a substantial load on healthcare systems and the economy [25]. This is particularly prevalent among the older population, as their hospital stays are extended due to underlying conditions, additional complications of SARI and the need for intensive care [18,22,26]. Additional healthcare resources are required to effectively prevent and treat influenza and SARI. This study demonstrated the much higher cost associated with addressing SARI compared to AEBA. It aids in the allocation of resources for infectious diseases, as well as the preparation of finances, beds, and human resources for outbreaks. Further exploration is required to assess the cost and value of vaccination for elderly and high-risk groups in a population using a cost-benefit analysis (CBA).

This study does possess several limitations. The cost analysis for SARI cases, as well as an AEBA, may not entirely reflect the precise hospitalization and service costs due to the retrospective data collection, which can introduce biases. Additionally, the rapidly evolving treatment approaches for both infectious and non-infectious respiratory diseases can significantly impact the cost-effectiveness of managing these conditions. Challenges were encountered during data collection at various levels, particularly concerning the availability and quality of patient medical records. Furthermore, primary costing methodology used in this study was top-down costing. As a result, it is possible that the actual cost was underestimated.

CONCLUSION

This study has found out that the cost of treatment for SARI is RM1,587.11 ($US334.80), which is much higher (30.7%) in comparison to the cost of treatment for AEBA which is RM1,214.41 ($US256.18). This projects a shorter ALOS for AEBA which is only 3.5 days compared to SARI which is 6.3 days. Though this does not imply that treating AEBA is more cost efficient as each individual patient is dynamic and presents with different co-morbidity and risks. Cost analysis demonstrates that health expenditure on SARI is more than AEBA due to acute and severe nature of the disease, higher intensity of medical interventions, potential complications, and increased strain on healthcare resources. These insights can inform policymakers, healthcare providers, and researchers in resource allocation, public health planning, and developing targeted interventions to address the economic challenges posed by SARI. Health financing constitutes a vital element in addressing communicable diseases. Sufficient and enduring funding is needed in order to efficiently tackle and manage communicable diseases and safeguard the well-being of the general population.

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RESEARCH ARTICLE

ESTIMATION OF PRO-INFLAMMATORY MARKERS IN NIGHT SHIFT HEALTHCARE WORKERS AND IDENTIFY RISK FACTORS ASSOCIATED WITH IT

*Jyotirmayee Bahinipati[1] *, Baibhav Agarwal[2], RajLaxmi Sarangi[1], Rg Asutosh Mohapatra[3] Mona Pathak[4], Srikrushna Mahapatra[1], Soumya R. Mohapatra[5]*

1. Department of Biochemistry, Kalinga Institute of Medical Sciences, KIIT University, Bhubaneswar, Odisha, India
2. MBBS Student, Kalinga Institute of Medical Sciences, KIIT University, Bhubaneswar, Odisha, India.
3. Department of Orthopedics, SCB Medical College and Hospital, Cuttack, Odisha, India,
4. Department of Research & Development, Kalinga Institute of Medical Sciences, KIIT University, Bhubaneswar, Odisha, India
5. School of Biotechnology (KSBT), KIIT University, Bhubaneswar, Odisha, India.

Correspondence: jyotirmayee.bahinipati@kims.ac.in

ABSTRACT

Shift labor, with hours outside of the regular diurnal work cycle, is used to facilitate round-the-clock emergency healthcare services. This impacts the circadian rhythm, which can potentially activate the pro-inflammatory responses of the immune system. This study aimed to find out the levels of pro-inflammatory markers in night shift healthcare workers and find risk factors associated with their increase.

303 participants (doctors, nurses, technicians, health care aids) were recruited with 169 participants nightshift and 134 dayshift workers. Pro-inflammatory markers Highly Sensitive C-Reactive Protein (hsCRP) and Total Leukocyte Count (TLC)] were estimated. Factors were compared by t test, Wilcoxon Rank Sum test and Chi square test. Risk factors for hsCRP elevation were identified by logistic regression analysis.

Pro-inflammatory markers like hsCRP and TLC were significantly increased in night shift health workers in comparison to the day shift workers (hsCRP 0.30± 0.33 mg/dl vs 0.10± 0.09 mg/dl, TLC 8181.06± 1181.53 /cu mm vs 7473.80± 1018.81 /cu mm) respectively. Multivariate logistic regression analysis showed night shift work (OR 48.20 95% CI (4.99-465.61), age (OR 1.13 95% CI (1.01-1.26)) and BMI (OR 1.18 95% CI (1.06-1.32)) as independent predictors of elevated hsCRP after adjusting for other risk factors. Hence, night-shift work is an independent risk factor for a rise in pro-inflammatory markers. These findings might aid health care workers and policymakers strategize methods to tackle the challenges through providing support programs, counselling sessions to avoid ailments and deliver health services in a better way.

KEYWORDS

shift work, healthcare workers, inflammatory markers, hsCRP, TLC, BMI, lipid profile, cardio-metabolic diseases.

INTRODUCTION

Healthcare is one of the sectors that provides a continuous service round the clock, for the benefit of patients. Each healthcare professional is responsible for providing care through application of medical science, knowledge, skill and expertise. Hence healthy and psychologically balanced workplaces should be a priority for healthcare providers. Healthcare workers (HCWs) are bound to shift-work covering day and night in order to cover emergency needs. European observatory of working life survey (2016) has shown that 19% of HCWs (24% males and 14% women carried out night shift work in emergency unit [1].

Night shift work has physical, psychological and social effects on the life of an individual. It may cause severe long-term effects with regards to health, resulting in high economic cost for both the individual and society. Immediate problems associated with the shift work are sleep disturbances and fatigue [2]. An increasing number of studies shows that the effect of long-term night shift work on health includes cardiovascular diseases (such as angina pectoris and myocardial infarction (MI)), cerebrovascular diseases (such as stroke), metabolic syndrome, and mental illness (such as depression and sleep disorders), gastro-intestinal (GI) disorders, breast cancer and prostatic cancer [3]. In a study undertaken by Akersted and colleagues, white collar shift workers had a 2.6-fold higher mortality as compared to day-time workers [4]. An international agency for research on cancer categorized shift work, including night work, as a Group2A carcinogenic factor in humans [4]. Even the severity of these diseases is seen more in night shift workers compared to day shift staff. Non-traditional shift work, like rotating, early morning and night, usually stand out from typical work schedules and are often associated with extended episodes of wakefulness subjecting healthy individuals to inadequately adapt to the effects of shift work [5].

The health consequences of shift work are basically due to desynchronization between the circadian rhythm and environmental conditions. In addition, because individual biological rhythm re-entrains to a time shift at different rates, each time the work schedule rotates for a period of time after the time shift, the circadian system will be in a desynchronized state [6]. The major function of the circadian rhythm is internal cycling of physiological and metabolic events. Chronic disruption of circadian timing in shift work leads to higher risk of several pathologies. One potential common feature of the negative health consequences of circadian disruption may be dysregulation of the immune system. A comprehensive understanding of the effects of circadian disruption on immune function is lacking but evidence exists for bidirectional relationship between immune system and circadian timing. Both partial and total sleep deprivation/restriction increases the level of circulating pro-inflammatory cytokines [7].

Highly Sensitive C-Reactive Protein (hsCRP)) is a sensitive but non-specific inflammatory marker synthesized by the liver in response to stimulation by pro-inflammatory cytokines [8]. hsCRP and Total Leukocyte Count (TLC) are major risk factors as well as prognostic factors for cardiovascular diseases (CVD) and metabolic syndromes [9]. Nightshift work related circadian disruption has been associated with systemic inflammation [10]. Hence, these inflammatory markers can be used for early detection of long-term health side-effects of nightshift work and help their further prevention. Therefore, in this study we aim to find the levels of pro-inflammatory markers (hsCRP and TLC) in night-shift healthcare workers and find the risk factors associated with their increase.

MATERIAL AND METHODS

STUDY DESIGN, STUDY SETTING, STUDY POPULATION

This study was a hospital based cross-sectional observational study conducted in a tertiary healthcare setting of the Kalinga Institute of Medical Sciences, India. All the eligible health care workers (doctors, nurses, technicians and health care aids) in the age group 25-45 years were included for participation in the study and those with known inflammatory disorders, diabetes mellitus, hypertension and known CVD cases were excluded from the study.

Data collection and Investigations: A total 303 participants were recruited for the study with 169 participants from night shift and 134 participants of day shift HCWs who were taken as our control group. Frequency of night shift per month and the duration of exposure to night shift since worked (in years) were recorded. Histories regarding smoking, alcoholism and regular exercise was taken. Blood pressure was measured in a mentally and physically relaxed state with an average of a minimum three measurements of systolic and diastolic pressure (SBP, DBP) taken in mm of Hg. Weight and height of the participants were recorded and

Body Mass Index (BMI) was calculated. Waist circumference (WC) was measured in inches at the midpoint between lower border of rib cage and iliac crest.

5ml of fasting venous blood sample was collected under aseptic conditions. 1ml was kept in fluoride vials for plasma glucose estimation and 2ml in red topped vacutainers for lipid profile and hsCRP estimation. The rest of the amount was kept for TLC estimation in EDTA vials. After centrifuging and separation of serum, different parameters were analysed. Fasting blood sugar (FBS) was analysed by the hexokinase (HK) method. Serum cholesterol and triglycerides were done by enzymatic cholesterol oxidase peroxidase (CHOD-POD) and glycerophosphate oxidase – peroxidase (GPO-POD) methods respectively. Serum High Density Lipoprotein (HDL) was measured by the colorimetric non-HDL precipitation method and Low Density Lipoprotein (LDL) was calculated by the Friedewald's formula. hsCRP was estimated by particle enhanced turbidimetric assay ((hsCRP level ≤ 0.5 mg/dl was considered normal and > 0.5 mg/dl was considered elevated). All the parameters were analysed by a Cobas Integra 400 Plus analyzer (Roche diagnostics – Germany). The total leukocyte Count (TLC) was done in using a Beckmann Coulter LH 750 hematology analyser by impedance technology.

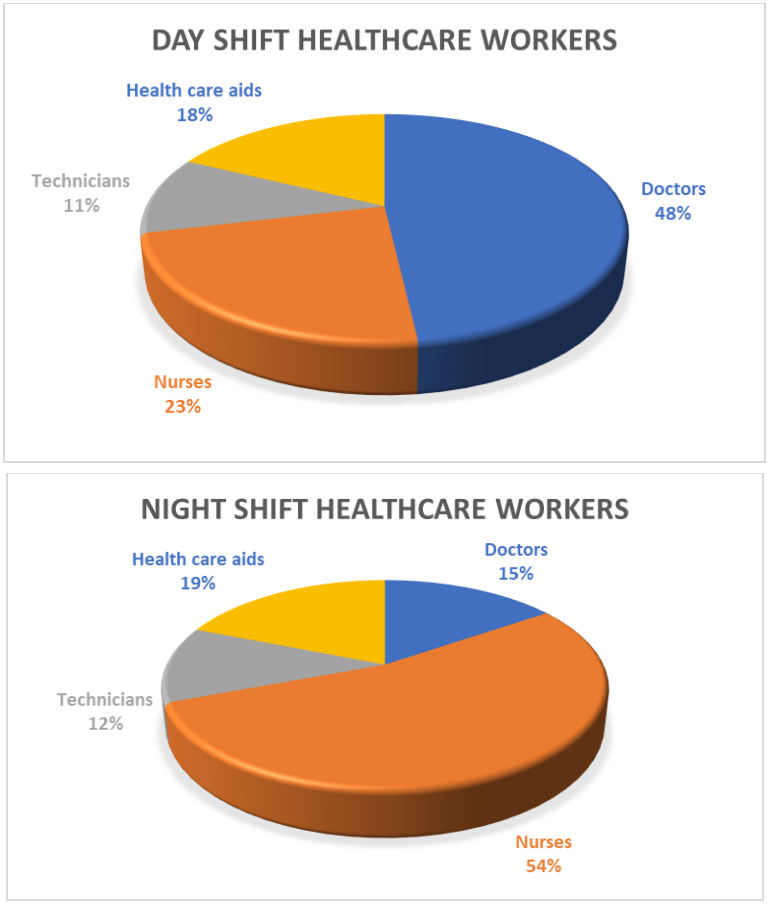
STATISTICAL ANALYSIS

All the continuous data obtained is described using mean, standard deviation and categorical data by their frequency (%). Factors were compared using t-test, Wilcoxon rank sum test and chi- square test. To identify risk factors for elevated hsCRP, logistic regression was used. The variable found significant under univariable regression analysis were the candidate variable for multivariable regression analysis after considering multi-collinearity. All the tests were interpreted at 5% level of significance. All the statistical analysis was done using StataCorp STATA software (version 15.1).

RESULTS

The cohort of HCWs recruited for the current study were from a renowned academic hospital in the eastern Indian state of Odisha. The job specifications of the HCW cohort recruited for this study has been depicted in Figure 1, which shows the majority of our study population were staff nurses (40.92%). In the night shift group, 53.84% were staff nurses whereas in day shift doctors were predominant at 51.49% of the group.

FIGURE 1: DISTRIBUTION OF HEALTHCARE PROFESSIONALS AMONG THE STUDY GROUP



The demographic and biochemical parameters of the HCW study group have been elucidated in Table 1. Individuals who worked in day shifts are on an average two years older than those who worked in night shifts, however, this difference was not statistically significant. BMI was similar in both the groups. Waist circumference was found to be significantly higher in night shift workers compared to their day shift peers (31.94± 6.37 inches and 30.79± 2.14 inches respectively) ($p<0.05$). SBP was significantly higher in night shift workers compared to the day shift workers. FBS, serum cholesterol, and LDL were significantly increased in night shift HCWs (82.59± 18.59 mg/dl, 173.22± 37.63 mg/dl, 106.15 ±28.22 mg/dl respectively) whereas there was no significant difference in serum TG between the two groups. Pro-inflammatory markers like hsCRP (0.30± 0.33 mg/dl vs 0.100± 0.09 mg/dl) and TLC (8181.06± 1181.53 /cu mm vs 7473.8± 1018.8 /cu mm) were significantly increased in night shift compared to day shift HCWs.

TABLE 1: DEMOGRAPHIC AND BIOCHEMICAL PARAMETERS OF THE STUDY GROUP

Sl.	Variables	Day Shift	Night shift	p-value
1	Age (in years)	29.5± 9.00	27.89± 6.57	0.07
2	BMI (Kg/m2)	23.11± 5.39	23.97± 5.35	0.17
3	Waist Circumference (in Inches)	30.79± 2.14	31.94± 6.37	<0.05*
4	SBP (mm of Hg)	114.38± 9.85	119.03± 12.94	<0.001*
5	DBP (mm of Hg)	74.04± 7.58	75.55± 7.92	0.09
6	FBS (mg/dl)	78.12± 8.55	82.59± 18.59	<0.05*
7	Cholesterol (mg/dl)	160.70± 27.29	173.22± 37.63	<0.001*
8	TG (mg/dl)	109.39± 38.77	118.84± 50.64	0.07
9	HDL (mg/dl)	40.17± 6.82	43.30± 9.40	<0.001*
10	LDL (mg/dl)	98.64 ±20.15	106.15 ±28.22	<0.05*
11	VLDL (mg/dl)	21.87± 7.75	23.76 ±10.12	0.07
12	hsCRP (mg/dl)	0.10± 0.09	0.30± 0.33	<0.001*
13	TLC (/cu.mm)	7473.80± 1018.81	8181.06± 1181.53	<0.001*

Next, we embarked upon performing the logistic regression analysis of hsCRP with various factors by both univariate and multivariate analysis (Table 2). Because of the multi-collinearity some of the variables (measured only in the night shift workers like for frequency of night shift, duration of night shift) and serum cholesterol, collinearity with HDL and LDL were not included in the multivariate analysis. Participants who were not previously diagnosed of diabetes mellitus or hypertension, but with elevated values were found on examination and those with history of smoking and alcoholism were excluded. While analysing for risk factors and predictors of hsCRP by regression analysis as these factors may themselves be responsible for increase in hsCRP [11]. After screening for the exclusion criteria, a total of 279 participants were then included for the analysis. Univariate regression analysis reveals hsCRP in the staff member doing night shift to be elevated 31-times in comparison to the daytime healthcare workers. However, after adjusting for other factors in the multivariate analysis, it reveals a 48-fold increase in hsCRP in night shift workers OR 48.20 95% CI (4.99-465.61).

Furthermore, age was also a significant factor for determination of hsCRP levels because with a year increase in age there was 0.08-fold elevation in hsCRP. Marital status was also a significant factor for elevated hsCRP because married HCWs had a 6-fold increase in hsCRP as compared to those unmarried. But after adjusting for other factors, it cannot be an independent predictor for elevated hsCRP. Our results suggest that higher BMI is also a reason for elevated hsCRP. SBP, HDL and LDL were found risk factors for elevated hsCRP but could not be predictors as they were not significant by multivariable analysis. Our multivariable analysis showed night shift, age and BMI as independent predictors of elevated hsCRP even after adjusting for other risk factors.

TABLE 2: LOGISTIC REGRESSION ANALYSIS FOR UNIVARIATE AND MULTIVARIATE VARIABLES

Factors		Univariate		Multivariate	
		OR (95% CI)	p value	OR (95% CI)	p value
Age		1.08(1.03-1.13)	<0.001*	1.13(1.015-1.26)	<0.05*
Gender	Male	1.00			
	Female	1.9 (0.86-4.32)	<0.001*		
Marital	Unmarried	1.00		1.00	
Status	Married	5.89(2.55-13.61)	<0.001*	1.36(0.35-5.27)	0.65
Shift work	Day	1.00		1.00	
	Night	31.26(4.20-232.22)	<0.001*	48.20(4.99-465.61)	<0.001*
Frequency of night shift work		1.22(1.11-1.34)	<0.001*		
Duration of night shift work (since years)		1.59(1.39-1.89)	<0.001*		
Exercise	No	1.00			
	Yes	0.135(0.08-0.2)	0.68		
Waist Circumference		1.04(0.98-1.09)	0.127		
BMI		1.19(1.11-1.28)	<0.001*	1.18(1.06-1.32)	<0.001*
SBP		1.07(1.04-1.11)	<0.001*	1.03(0.99-1.07)	0.104
DBP		0.99(0.95-1.04)	0.88		
FBS		1.03(1.01-1.05)	<0.05*	0.99(0.96-1.02)	0.74
Cholesterol		1.03(1.01-1.04)	<0.001*		
Triglycerides		1.00(0.99-1.10)	0.40		
HDL		1.11(1.06-1.16)	<0.001*	0.92(0.79-1.07)	0.30
LDL		1.03(1.02-1.05)	<0.001*	1.04(0.99-1.09)	0.09
VLDL		1.01(0.97-1.05)	0.40		

DISCUSSION

Healthcare workers who work during the night face disruptions in their circadian rhythms including sleep disturbances and altered eating patterns. These factors potentially contribute to an increased risk of inflammation in the body. Proinflammatory markers like hsCRP indicate inflammation and elevated levels of these markers suggest inflammatory response in the body. In this study hsCRP was estimated in night shift healthcare workers and risk factors association with elevated hsCRP was analysed.

In our current study, the mean age of the control group was (29.5±9.00yrs) which is two years higher than the cases (27.89 6.57yrs). This may be because in a healthcare facility usually younger people are more exposed to night shift work, however, this difference was not statistically significant. Mean frequency of exposure to night shift was (8.15±2.39) days in a month with average exposure of (4.25±4.00) years.

There was no significant difference in BMI in both the groups. Similar findings were also seen in the study done by Buchvold et.al [12]. However, other studies (Di Lorenzo et. al. reported that obesity was more prevalent in shift workers (20%) compared to daytime workers (9.7%). Night shift work was associated with increased BMI regardless of age or duration of shift work exposure [13]. Waist circumference is an indicator of abdominal obesity. Our study revealed that the mean waist circumference in night shift healthcare workers was higher compared to the day shift workers. This result is in concordance with the study by Sun M et. al. where, they found that permanent night shift had highest odds ratio for abdominal obesity [14]. Night shift work schedule leads to desynchronization and loss of normal

variation in metabolic hormones, like, insulin, cortisol and leptin which, disrupts the balance of energy metabolism and leads to increase in waist circumference. Besides shift work also causes change in lifestyle, sleep deficiency, decreased physical activity which can also be linked with increase in waist circumference [15].

SBP was significantly higher in night shift workers compared to day shift workers which is in accordance with the study by Yeom Han et al [15]. Blood pressure control is more difficult in shift workers which may be because of irregular light exposure, which is associated with deranged circadian rhythm and melatonin secretion [9]. Besides, night shift duty also increases sympathetic nervous system activity, increase in blood pressure and heart rate. Prolonged exposure to these factors may entrain the cardiovascular system to operate at an elevated pressure equilibrium through structural adaptations such as left ventricular hypertrophy [16].

Working in night shift disrupts the daily routine of an individual affecting normal food intake and exercise. In our study we found that, fasting blood sugar (FBS) was significantly higher ($p< 0.05$) in night shift healthcare workers. Similar findings were also reported by Loren Zo et al and Nagaya et al [13,17]. Blood glucose homeostasis is associated with central circadian rhythmicity as well as peripheral oscillators located in regions such as the liver, pancreas, muscles and white adipose tissue [17]. Adipose tissue plays an important role in the endocrine system. In addition to functioning as a fat depot, these tissues play a role in adipokine secretion, which is involved in several physiological pathways, including sugar and energy metabolism. Sleep deprivation also leads to decrease in glucose tolerance by affecting the cortisol levels and also it leads to insulin resistance. Hence, proper screening and intervention strategies in rotating night shift workers are needed for prevention of diabetes mellitus [18].

Furthermore, we found that serum total cholesterol and LDL cholesterol was significantly higher in night shift subjects. However, no difference was seen in serum TG levels. Serum HDL was found to be higher in night shift. Similar to our findings, Ghiasvand M et al and Rahmann AM et al found higher total cholesterol and LDL–C in night shift workers but TG, HDL was not correlated with shift work [19,20]. Furthermore, studies have shown that night workers who slept less than 7hrs per night faced higher risk of dyslipidemia [19,20]. The circadian clock is the key regulator of lipid metabolism therefore, periodic disruption of circadian rhythm negatively affects lipid metabolism promoting the development of atherogenic lipid profile [20].

In our study all the parameters for metabolic syndrome (waist circumference, SBP, FBS, lipid profile) were deranged in night shift healthcare workers suggesting night shift may increase the risk of metabolic syndrome in individuals. Circadian misalignment due to night shift has also been found to result in adverse metabolic and cardiovascular consequences, including a decrease in leptin, an increase in glucose and insulin, an increase in mean arterial blood pressure, and reduced sleep efficiency [21,22].

In our study, pro-inflammatory markers hsCRP and TLC were higher ($p<0.001$) in night shift healthcare workers, Kim et al also found increase in inflammatory markers in night shift workers of other professions [23]. S Puttonen et al in their study linked irregular working hours with increase in inflammatory markers. They even found out that night shift workers who moved to day shift work, inflammation was decreased pointing reversible effect of shift work on inflammation [23].

Chronic low-grade inflammation plays an important role in the development of cardiovascular diseases, regular follow up of inflammatory markers in night shift workers may serve as an early indicator in predicting effects of shift work on health [22]. Disruption of the circadian rhythm due to night shift work results in increase in cytokines hence increasing the levels of pro-inflammatory markers. hsCRP is a marker of systemic inflammation and it is now well accepted that inflammation has an important role in development of cardiovascular disease. Moreover, epidemiological studies have shown chronically elevated hsCRP predicts CVD [24]. Logistic regression analysis of hsCRP with various factors by both univariate and multivariate analysis was done except some of the variables where multivariate analysis cannot be done owing to multicollinearity. By univariate regression analysis it was seen that age, female gender and married persons are the risk factors for increase in hsCRP, but female gender and marital status were not found to be independent predictors for increase in hsCRP. Tang Y et al in their study showed that serum hsCRP increases with ageing. Ageing is thought to be related to the inflammatory processes [25]. Several cytokines IL-6, TNF and CRP increases with age in absence of acute infection. In the study done by Tang Y et al male persons had higher hsCRP compared to the female, which was in contradiction to our study [25]. This may be because

gender was not equally distributed in our study group and had more female predominance.

Night shift work in healthcare personnel was found to be an independent risk factor for increase in hsCRP. Though frequency of night shift work per month and duration of night shift work since years were found to be risk factors for increase in hsCRP but they are not found as the independent predictors for increase in hsCRP. CJ Morris et al in their study found that there was 3-29% increase in inflammatory markers in night shift workers [26]. In our study, waist circumference was not found to be a risk factor for increase in hsCRP. Whereas higher BMI was found to be an independent risk factor for elevated hsCRP, which in turn is a risk factor for CVD.

Serum fasting blood sugar (FBS), serum cholesterol, serum LDL and HDL though found as the risk factor for elevated hsCRP but was not found as the independent predictor in our study. hsCRP is stimulated and produced in the liver by pro-inflammatory cytokines. Hence, elevated FBS is associated with increase concentration of hsCRP [27,28]. Epidemiological studies have also indicated that individuals with dyslipidemia are in a pro- inflammatory state with elevated levels of cytokines IL-6, TNF which are formed due to ongoing inflammation in artery stimulated by oxidized LDL leading to production of these cytokines hence increasing the expression of hsCRP [29].

LIMITATIONS:

In our study we were not able to obtain detailed personal histories which may have biased our study results. We had a greater percentage (53.85%) of nurses in our study group. So, with a larger sample size and proper segregation of health care workers it will provide much better results. The comparison within different groups of health care workers will be more insightful in identifying those groups who are at a greater risk of increase in proinflammatory markers and hence the CVD risk.

CONCLUSION

Proinflammatory markers (hsCRP, TLC) was higher in night shift health care workers. Female gender, marital status, frequency and duration of night shift was found as risk factors for increase in hsCRP but by multivariate regression analysis night shift work itself is found to be an independent predictor for increase in these proinflammatory markers. This increase is further aggravated with age and BMI. As hsCRP is a significant contributor of cardio-metabolic risk factor, it is important to identify and prevent the rise of these proinflammatory factors by regular follow up. Health workers must be counselled and made aware of different lifestyle interventions. Health organizations and systems should also promote and initiate strategies to prevent such occupational health hazards and enhance their performance. Further studies must be done to find risks in each vocational group in comparison to their mode of work and stress along with their personal and lifestyle factors which may together increase the risk of development of proinflammatory factors leading to increase in CVD risks.

CONFLICT OF INTEREST STATEMENT:

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS:

JB: Conceptualization, Methodology, Investigation, Writing - Original Draft. BA: Resources and Data curation. RS: Conceptualization, Investigation, Validation, Supervision, Writing - Original Draft. RAM: Resources and Data curation, MP: Data analysis. SM: Conceptualization, Resources. SRM: Formal analysis, Supervision, Final Review. All the authors read, reviewed, and revised the manuscript.

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DATA AVAILABILITY STATEMENT:

All data generated during the current study are available upon reasonable request sent to the corresponding author.

ETHICS STATEMENT:

Involvement of human participants in the current study were reviewed and approved by the Ethics Committee of KIMS (CDSCO Reg No : ECR/321/Inst/OR/2013/RR-20)(Reference: KIIT/KIMS/38/2019). Written informed consent for participation in this study was taken in accordance with the national legislation and the institutional requirements.

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FOOT NOTES:

BMI – Body mass index, SBP- Systolic blood pressure, DBP- Diastolic blood pressure, FBS- Fasting blood sugar, TG- Triglyceride, HDL- High density lipoprotein, LDL- Low density

lipoprotein, VLDL- Very low-density lipoprotein, hsCRP- high sensitivity lipoprotein, TLC- Total leucocyte count

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RESEARCH ARTICLE

SUCCESS FACTORS OF TELEMEDICINE STARTUP IN VIETNAM: THE ROADMAP TO TRANSFORM HEALTHCARE CUSTOMER BEHAVIOR

*Hoang Cuu Long *, Do Le Duc Thuan*

University of Economics Ho Chi Minh City, Viet Nam

Correspondence: hoangcuulong@ueh.edu.vn

ABSTRACT

INTRODUCTION & OBJECTIVE

Telemedicine has become a breakthrough solution for improving access to health care services. In Vietnam, telemedicine is a key national program developed by the Ministry of Health and the government. However, the implementation process encountered many challenges, and the number of successful businesses in this field is still limited. This study integrated the technology acceptance model and the extended valance framework to develop an efficient behavioral model for investigating the relationship between trust in provider, perceived ease of use, perceived benefit, and perceived risk on usage intention.

METHODS

The proposed framework was verified through in-depth interviews with three experts in the Vietnamese health technology market and was tested by 246 participants via a web-based survey.

RESULTS

Generally, the findings showed that perceived ease of use and perceived benefit positively and significantly affected usage intention, whereas perceived risk negatively and significantly influenced usage intention. Trust in the provider positively and significantly influenced usage intention and perceived benefit, but negatively influenced perceived risk (β = -0.677, p = 0.000). Perceived ease of use significantly and positively affected perceived benefit, whereas the effect of perceived ease of use on perceived risk was not statistically significant (p = 0.128).

CONCLUSION

The proposed hypothetical model offers empirical insights for healthcare professionals, service providers, and authorities. Moreover, it can serve as a theoretical basis for future research.

KEYWORDS

Telemedicine adoption, behavioral intention, extended valence framework, health technology startups, Vietnam

INTRODUCTION

According to the American Telemedicine Association, Telemedicine is defined as "technology-based services tailored to use for handling medical information exchanged from one location to another via electronic communication systems to improve a patient's clinical health status" [1]. A key differentiator of Direct to Customer (DTC) telemedicine, in contrast to other forms of telemedicine, is patient initiation of care, with no intermediary clinician or facilitator present.

Telemedicine encounters can be between patients and their own provider, backup provider at the same institution, or provider with whom they have no pre-established relationship. There are two types of DTC telemedicine: synchronous and asynchronous. Synchronous telemedicine involves real-time two-way video conferencing, chat rooms, or audio-only encounters, whereas asynchronous telemedicine, also referred to as "store and forward," involves information transferred between patient and provider over hours or days [2]. Asynchronous is the first format of telemedicine and is still widely used in teleradiology applications. Although startup activities are dynamic in other sectors, the healthcare startup ecosystem remains in its infancy in Vietnam. According to a report by Do Venture and NIC (2020), capital invested in the healthcare sector was just $US3mn in 2020, much less than in other areas such as payment, retail, education, or financial services (Do Ventures and NIC, 2020)

Healthcare startups in Vietnam are classified into the following areas: telemedicine (eDoctor, Jio Health, Doctor Anywhere), the pharmaceutical supply chain (thuocsi.vn), doctor bookings (Docosan, Wellcare, Bookingcare), and outpatient clinics (315 Healthcare, Careplus, Med247). Although telemedicine has huge benefits for healthcare systems, we must overcome many barriers to deploy this technology in Vietnam. The concept of telemedicine is still new with many patients and healthcare providers. Currently, most studies related to telemedicine in Vietnam have focused on the technology and operational models for healthcare providers. Traditional consultation servicesat hospitals, clinics and doctor's offices are still the top-of-mind choice of Vietnamese people when they have medical issues. This is the main challenge of telemedicine startups in Vietnam.

How to convince and educate the patients to use online medical services? What are the motivation factors to attract the healthcare customer? What are the main constraints which prevent the patients from changing their habits? Those are the key questions which were studied in this research. There is a lack of studies on healthcare customer behavior. This situation encouraged authors to conduct this study to identify the factors influencing healthcare customers' decisions to adopt telemedicine services and investigate the relationships among these factors. The study was conducted in private healthcare organizations operating in the Vietnam market.

LITERATURE REVIEW

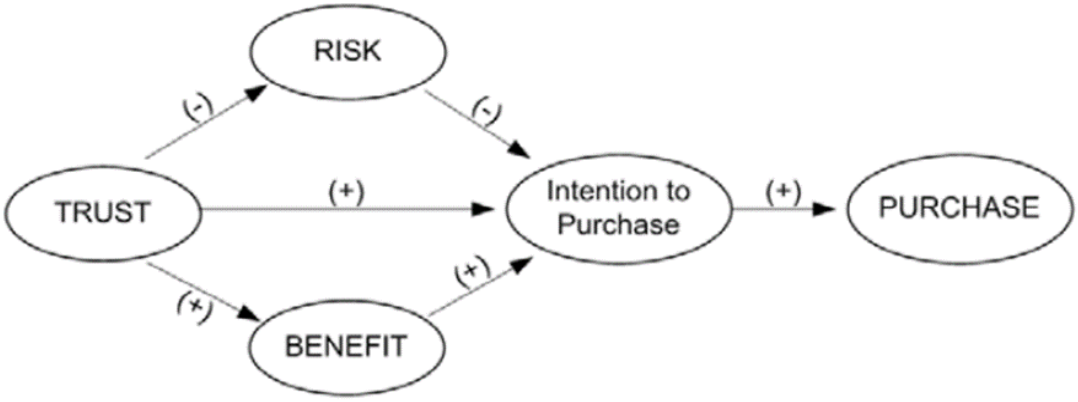
THEORY OF REASONED ACTION AND THE WEB TRUST MODEL

The theory of reasoned action (TRA) is a theory based on many studies related to new technology acceptance (Al-Mamary et al., 2016). TRA provides that beliefs lead to attitudes, which leads to intentions, which then lead to behaviors [3]. Thus, to identify and interfere with the factors influencing behaviors, researchers can deeply dive into factors that can affect beliefs and attitudes. However, Davis et al. (1989) found that attitudes did not practically fit in the model. Attitudes only partially mediate the effects of these beliefs on intentions. Davis simplified the model by removing attitude, making it more parsimonious [4]. Applying the parsimonious version of TRA to investigate customer behaviors with e-commerce vendors, McKnight et al. (2002) provided a Web Trust Model including four high-level constructs: disposition to trust, institution-based trust, trusting beliefs, and trusting intentions, which are further delineated into 16 measurable, literature-grounded sub-constructs. The results showed that the trusting beliefs of specific web vendor attributes lead to trusting intention to engage in trust-related behaviors with a specific web vendor, which in turn results in trust-related behavior. The model was applied to assess the influence of trust on behaviors that are essential to the widespread adoption of e-commerce [5].

EXTENDED VALANCE FRAMEWORK

By integrating the TRA-based Web Trust Model and valence framework, Kim et al. (2009) proposed an extended valence framework as follows:

FIGURE 1. EXTENDED VALENCE FRAMEWORK



Source: [6]

The theoretical contributions of Kim et al. (2009) can be summarized into two key points: first, the extended valence framework and expectation-confirmation theory were adapted within the foundation of the theory of reasoned action to provide the basic logical sequence as follows: beliefs/attributes → transaction intention → transaction behavior → evaluation of transaction outcomes' → future intention. Second, this study bridges two important factors (i.e., trust and satisfaction) from two theories (i.e., the extended valence framework and expectation-confirmation theory) over three longitudinal phases (i.e., pre-purchase, purchase, and post-purchase) in the e-commerce context. Trust was assumed to affect purchase intention directly and indirectly through two mediators: perceived risk and perceived benefit. Consistent with the TRA, purchase intention is posited as an immediate determinant of actual purchase behavior [6]. This study emphasizes the importance of trust in customer purchase decisions in the internet environment.

Based on the extended valence framework developed by Kim et al. (2009), Gong et al. (2019) investigated factors influencing the adoption of online health consultation services (OHCS) in China. Gong modified the extended valance framework by adding subjective norms and the habit of visiting doctors in person (offline habits) to the model. The results of this study showed that trust in provider, subjective norm, and perceived benefit had a positive influence on the intention to adopt OHCS, while offline habits negatively affected OHCS. The association between perceived risk and OHCS adoption was not supported. Moreover, trust in the provider showed a mediating effect between subjective norm and the intention to adopt OHCS, while perceived benefit mediated the relationship between trust in the provider and the intention to adopt this technology [7]

TECHNOLOGY ACCEPTANCE MODEL

The Technology Acceptance Model (TAM) has often been used to explain the attitudes and behaviors of customers toward new IT products [8]. The TAM identifies two determinants of user acceptance: perceived usefulness and perceived ease of use. Perceived usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance." This follows from the definition of the word useful: "capable of being used advantageously." A system high in perceived usefulness, in turn, is one for which a user believes in the existence of a positive use-performance relationship. Perceived ease of use refers to "the degree to which a person believes that using a particular system would be free of effort." This follows from the definition of "ease": "freedom from difficulty or great effort." An application perceived as easier to use than another is more likely to be accepted by users. [4]

TAM also has various alternative models: Lowry et al. (2013) proposed the hedonic motivation system adoption model (HMSAM) for these kinds of systems. HMSAM was designed to improve the understanding of hedonic motivation system (HMS) adoption. [9]. Scherer developed amatching person–technology model (MTP). The MPT model has accompanying assessment measures used in technology selection and decision-making, as well as outcome research on differences among technology users, non-users, avoiders, and reluctant users [10]. Moreover, several studies proposed the extension of the original TAM by adding external variables to explore the effects of external

factors on users' attitudes, behavioral intentions, and actual use of technology.

HYPOTHESES DEVELOPMENT

USAGE INTENTION

In this study, the adoption of telemedicine was investigated based on the intention to use telemedicine, rather than actual usage. To explain this matter, we saw that it was difficult to gather information about the multidimensional aspects of "use" (such as mandatory or voluntary use). Moreover, as telemedicine was a new concept in Vietnam, many people had never used the service because they did not know that the service was available, or communication about the service had not reached them. Delone and McLean (2003) suggested that "intention to use" could be a valuable alternative measure in some circumstances. Many studies have shown that the behavioral intention to use a new technology is a reasonable indicator of future system usage, especially when the technology is still being developed and has a small number of users, or when the objective of the research is to predict future use [11]. However, we understand that it is necessary to investigate actual usage behavior as a valid construct, and this could be done in future research when telemedicine becomes more popular.

PERCEIVED RISK

Perceived risk is the negative utility associated with the adoption of telemedicine services that customers are motivated to minimize or at least reduce. In this study, we focused on the risk caused by the uncertainty and uncontrollability of medical consultations in cyberspace. Patients are afraid that the quality of the medical consultation will not meet the need for diagnosis and treatment, which adversely affects their health. Currently, in telemedicine consultations, doctors can only see patients using mobile phone cameras. They cannot touch, hear body sounds, perform diagnostic techniques, or acquire necessary preclinical data from patients. Therefore, in certain situations, doctors do not have sufficient information to make decisions. Perceived risk can be even more significant in emergency situations with time constraints. If telemedicine service does not go smoothly, the patient's condition can become more severe. Another concern of the user is the privacy risk involved in the collection, manipulation, illegal commercialization, and disclosure of health information [12]. Health information is normally considered the most sensitive source of information. Various studies have indicated a negative relationship between online cybersecurity concerns and the use of online services [13]. Thus, we hypothesized:

***H1**: Perceived risk negatively affects the usage intention of telemedicine.*

PERCEIVED BENEFIT

Perceived benefit is the positive utility associated with the adoption of telemedicine services that the customer is motivated to maximize or at least increase. Various studies have shown that perceived benefits have a positive effect on customer behavioral intention [14]. Generally, users adopt new technology if they are convinced that the product can provide added value. With telemedicine services, patients can connect to doctors almost immediately from anywhere with an available Internet connection. Cost and time saving, the readiness of health services in underserved areas, the convenience in monitoring and managing medical records, and the possibility of maintaining social distancing during a pandemic have been identified as superior benefits compared with in-person medical visits. Thus, we hypothesized:

***H2**: Perceived benefit positively affects the usage intention of telemedicine.*

TRUST IN PROVIDER

Trust is defined as one's willingness to rely upon another [15], and is a multi-dimensional concept related to multiple targets: salesperson, product, and company [16]. In our study, trust refers to trust in telemedicine providers, including both telemedicine and telemedicine doctors. In telemedicine, consultations, transactions, and prescriptions are implemented over long distances. A doctor is normally allocated randomly by the system, and the patient normally does not know the doctor before. Thus, the level of uncertainty and doubt is higher than in traditional health services, and trust seems to be the key driver influencing customers' decisions. Prior studies have found that trust has a positive influence on behavioral intention [17]. In addition, patients do not have the capability to evaluate the accuracy and quality of their medical services. Thus, they normally rely on beliefs, reputation, and gut feelings when making decisions. Hence, we hypothesize the following:

***H3**: Trust in provider positively affects the usage intention of telemedicine*

INDIRECT EFFECTS OF TRUST

In addition to the direct effect of trust on usage intention, trust also operates in an indirect manner through two mediating variables, perceived risk and perceived benefit, as confirmed by Kim et al. (2009) in the context of e-commerce. When using telemedicine, patients experience some level of risk due to the nature of the internet environment. When a customer acts in situations of high uncertainty and risk, trust becomes a key factor influencing perceived risk. Moreover, customers tend to have more expectations regarding the benefits they can obtain with a reputed provider or with a provider that they had good experience with in the past. Therefore, trust also increases customers' perceived benefits before they decide to use the service. Thus, we hypothesized:

***H4**: Trust in provider negatively affects the perceived risk of the customer.*

***H5**: Trust in provider positively affects the perceived benefit of the customer.*

PERCEIVED EASE OF USE

According to the TAM, perceived ease of use is defined as the extent to which a person believes that using a system is free of effort [18]. Telemedicine is operated on a web-based platform or mobile application. If the customer finds that it is not convenient to use the software, or the application requires a high-speed Internet connection that they cannot access, it will become a barrier for the customer to adopt the new technology. In addition, the targeted customers of telemedicine are the mass population, including older people, people with a low educational background, and people living in rural areas who are not familiar with new technologies. Thus, telemedicine platform should be really intuitive and easy to use that everyone can adopt it. Convenience is one of the advantages of telemedicine, as defined in the SWOT analysis, and it directly affects customers' decisions. Thus, we hypothesize the following:

***H6**: Perceived ease of use positively influences the usage intention of telemedicine.*

INDIRECT EFFECTS OF PERCEIVED EASE OF USE

According to the TAM, perceived ease of use also influences perceived usefulness [18], which was separated into two constructs in this study: perceived risk and perceived benefit. In common sense, not many people are patient enough to explore a new technology if it is too complicated to use, as they may stop trying and conclude that the service is not beneficial for them. Perceived ease of use refers to "the degree to which a person believes that using a particular system would be free of effort". This follows from the definition of "ease": "freedom from difficulty or great effort." An application perceived to be easier to use than another is more likely to be accepted by users. [18]). As Surendran (2019), TAM identifies two determinants of user acceptance: perceived usefulness and perceived ease of use. Perceived usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance". This follows from the definition of the word useful: "capable of being used advantageously".

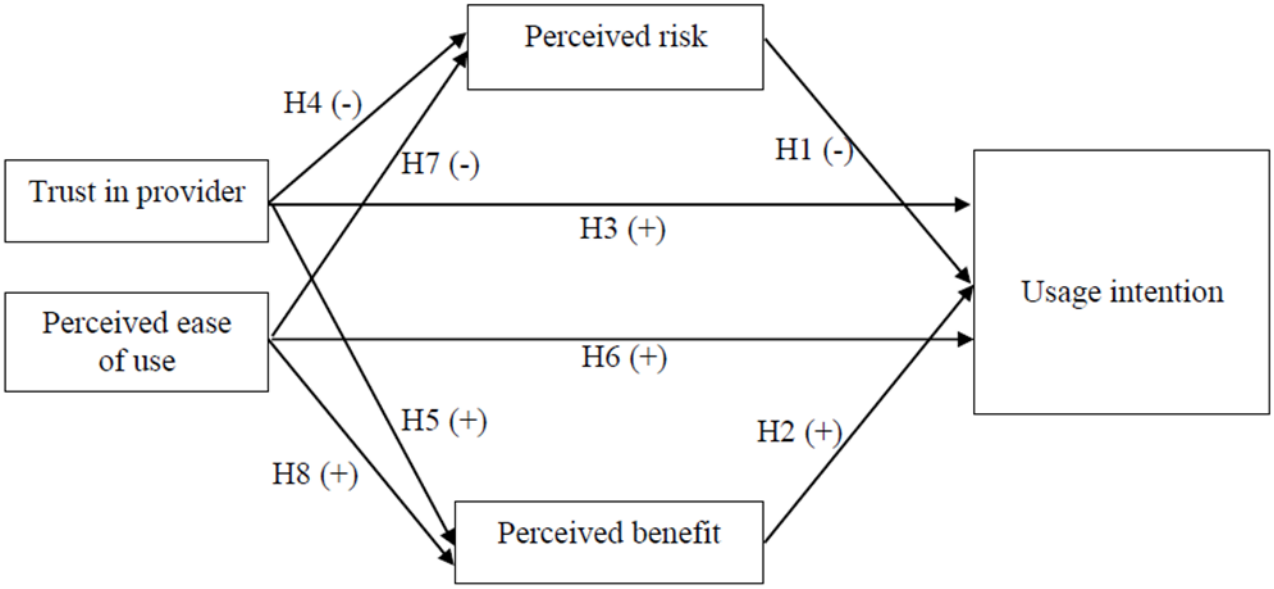
In the context of telemedicine, if the users find that it is too complicated to book a consultation by using the mobile app, they can consider this a risk that telemedicine cannot meet the medical needs in urgent situations. On the other hand, a friendly user interface will give customers the perception that the technology can save time and money. Thus, based on the TAM, we hypothesized the following:

***H7**: Perceived ease of use negatively influences the perceived risk of the customer.*

***H8**: Perceived ease of use positively influences the perceived benefit of the customer.*

Overall, we integrated the web trust model, valence framework, and the technology acceptance model into the hypothetical framework of this study. The framework is illustrated in Figure 2.

FIGURE 2. HYPOTHETICAL FRAMEWORK OF THE STUDY



Source: By Authors, 2023

MEASUREMENT AND SURVEY

The measurement scale for each construct was designed based on previous studies and rationales initiated by the authors. This study's instruments were validated in a number of ways.

The measurement items were verified by experts in health technology through in-depth interviews before testing the participants. Usage intention (UI) was measured using three items adapted from a study conducted by Venkatesh et al. [19]. Trust in provider (TP) was measured using three items adapted from Gong et al. (2019) and a self-developed item. Perceived ease of use (PE) was measured using four items adapted from Davis et al. (1989). Perceived risk (PR) was measured using three items adapted from McKinght et al. (2002) and Yi et al. (2013) and one initiated item. Perceived benefit was measured using two items adapted from Gong et al. (2019) and the two items that we initiated.

QUALITATIVE RESEARCH

After f developing the hypothetical model, we conducted in-depth interviews with three experts in health technology to verify our assumptions. These interviews were conducted with a small number of participants, but over a longer time (more than 1 hour), following a planned program to explore the personal ideas and perspectives of the experts. The purpose of the interviews was to obtain more insight from the Vietnamese healthcare market and to evaluate whether the hypotheses were relevant. The interviews were organized in a semi-structured format that allowed both the interviewer and interviewee to have more freedom, so they could change the directions and explore additional rationales if necessary. From this, the researchers could adjust the hypothetical model and survey questionnaires that would be implemented with a number of study participants.

QUANTITATIVE RESEARCH

We designed a web-based self-reporting questionnaire. The questionnaire was delivered to the participants via social media and email. Participants were Ho Chi Minh citizens who had exposed to telemedicine before, or at least, had heard and understood the telemedicine concept on media. The survey included an introduction to the purpose of the study, guidance to perform the survey, and questions about the hypothetical constructs. The participants did not need to provide their personal information. Research participants consisted of more than 300 citizens with different demographic characteristics (age, income, education, etc.). The questionnaires were designed to investigate the impact of hypothetical constructs on patients' decision to adopt telemedicine services, the relationship among these constructs and the impact level of each construct. Each construct consisted of various indicators which were assessed by the questionnaires in the survey. The measurement items were designed based on the results of previous studies and adapted to the research objectives and situation in Vietnam. Responses to the questions related to perceptions of the individual items were measured by 5 points Likert

type scales, ranging from 1 (totally disagree) to 5 (totally agree).

STATISTICAL ANALYSIS

In this study, a two-step approach consisting of measurement modeling and structural equation modeling (SEM) was utilized for data analysis (Weston and Gore, 2006). Initially, exploratory factor analysis (EFA) was performed to verify the independence and distinctiveness of latent variables. EFA was conducted to test whether the indicators measured more than one construct. Convergent, composite, and discriminant validity were evaluated to confirm the measurement model. Composite reliability (CR) and Cronbach's alpha (CA) analyses were conducted to measure the degree to which responses were consistent across items within a construct (internal consistency). The CA and CR should be higher than the cutoff value of 0.7 [20]. Factor loadings and average variance extracted (AVE) were used to assess the convergent validity. The AVE and factor loadings of all the constructs should be higher than the suggested value of 0.5. Discriminant validity was evaluated by comparing whether the square root of the AVE of each construct was higher than its correlation coefficient with any other construct [21]. Path coefficients with p-values and goodness-of-fit indices were calculated. The ratio of Chi square values (CMIN) to degrees of freedom (CMIN/df) was recommended to be <3. The values of the goodness of fit index (GFI), Tucker-Lewis fit index (TLI), and comparative fit index (CFI) were suggested to be higher than 0.9, while the root mean square error of approximation (RMSEA) was recommended to be more than 0.08 and the root mean square residual (RMR) should be less than 0.05 [22]. AMOS 24 was used for SEM and SPSS 22 was used for all other analyses.

RESEARCH RESULTS

QUALITATIVE RESEARCH RESULTS

After conducting the in-depth interview with the experts, the study found that the hypothetical model and measurement were relevant with the local market. In Vietnam, telemedicine startups are still in the early stage of development. Thus, it is difficult for the customers to have really all perceived benefits and risks on something that they have never experienced. In general, people are aware that telemedicine can save time and cost of transportation. Moreover, many people agree that telemedicine is beneficial in cases they need urgent medical support or in remote areas where medical facilities are not available.

RESEARCH SAMPLE DESCRIPTION

A total of 285 participants agreed to participate in this study. They received online links and completed the survey. Then, 39 surveys were eliminated, as the participants did not complete all the compulsory questions or the results differed significantly from other observations (outliers). Finally, 246 valid survey forms were accepted for further analysis. Among the participants, 134 were women (54,5%), 110 were men (44.7%), and two were other (0.8%). Most of the participants were young – middle age, the 30–40 years old group contributed the majority (55.3%), 20 to 30 years old (23.6%), and the rest were more than 40 years old. Most of the participants had a higher educational background than the social average, 61.8% were at the bachelor's level, and 36.6% were at the post-graduate level. Most of the participants lived in municipal cities (such as Ho Chi Minh City and Ha Noi) (77.2%). The respondents' monthly income varied from 10 to 100 million VND, and 98.4% participated in at least one health insurance programme. Although all participants knew about telemedicine, only 33.3% had used these services previously. Most participants did not visit doctors too often, which could be due to their young age. Only 6.5% needed to visit a doctor every month, 35.7% of them went to see the doctors once every 3 to 6 months, and the rest rarely sought medical services. Detailed information is presented in Table 1.

Table 2 presents the descriptive statistics for the five constructs used in this study. The mean scores of Usage Intention, Trust in Provider, Perceived Ease of Use, and Perceived Benefit were higher than three points on the Likert-type scale, while Perceived Risk was lower than three. The results suggested that more participants had a positive perception of telemedicine services. It seemed to be beneficial and easy to use with these participants, and they were willing to adopt it.

TABLE 1. CHARACTERISTICS OF RESPONDENTS

ITEMS		FREQUENCY	PERCENT %
Age	20 to 30 years old	58	23.6
	30 to 40 years old	136	55.3
	40 to 50 years old	24	9.8
	50 to 60 years old	28	11.4
Gender	Male	110	44.7
	Female	134	54.5
	Other	2	0.8
Education	Post graduate	90	36.6
	Bachelor's Degree/College	152	61.8
	High School	4	1.6
Monthly Income	Less than 10 MM VND	18	7.3
	10 to 30 MM VND	88	35.8
	30 to 50 MM VND	80	32.5
	50 to 100 MM VND	54	22.0
	More than 100 MM VND	6	2.4
Place of Residence	Municipal cities	190	77.2
	Provincial cities	42	17.1
	Other area	14	5.7
Telemedicine service experience	Already used	82	33.3
	Not used yet	164	66.7
Frequency of seeing the doctors	Have chronic diseases, need to see doctors every month.	16	6.5
	Have chronic diseases, need to see doctors every 3 to 6 months.	36	14.6
	Do not have chronic diseases, need to see doctors every 3 to 6 months for regular health issues.	52	21.1
	Rarely go to see doctors.	142	57.7
Health Insurance	Participate in compulsory health insurance program only.	108	43.9
	Participate in commercial health insurance program.	134	54.5
	Do not participate in any health insurance program.	4	1.6

TABLE 2. SAMPLE DEMOGRAPHICS

CONSTRUCT	N	MINIMUM	MAXIMUM	MEAN	STD. DEVIATION
Usage Intention	246	1	5	4.1238	0.89776
Trust In Provider	246	1	5	3.4014	0.72996
Perceived Ease of Use	246	2	5	3.9228	0.63457
Perceived Risk	246	1	4	2.9461	0.79469
Perceived Benefit	246	2	5	4.1616	0.67541

EXPLORATORY FACTOR ANALYSIS – EFA

For data analysis, a two-step approach consisting of measurement modeling and structural equation modeling was conducted [23]. Initially, exploratory factor analysis (EFA) was performed to verify the independence and distinctiveness of latent variables. It was observed in Table 3 that KMO = 0.878 was higher than the cut-off value of 0.8 [24] and Barlett's test was statistically significant (p = 0.000). The results supported the validity of the data, indicating that they could be used for factor analysis.

TABLE 3. KMO AND BARTLETT'S TEST

Kaiser Meyer Olkin Measure of Sampling Adequacy.		0.878
Bartlett's Test of Sphericity	Approx. Chi-Square	2786.519
	df	171
	Sig.	0.000

Source: By Authors, 2023

Principal component analysis was conducted. Five factors were extracted, with cumulative sums of squared loadings of 71.663%, as shown in Table 4.

TABLE 4. TOTAL VARIANCE EXPLAINED

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	7.622	40.116	40.116	7.622	40.116	40.116	4.467
2	2.199	11.572	51.689	2.199	11.572	51.689	4.620
3	1.485	7.814	59.503	1.485	7.814	59.503	3.952
4	1.343	7.071	66.574	1.343	7.071	66.574	4.450
5	0.967	5.089	71.663	0.967	5.089	71.663	5.677
6	0.727	3.828	75.491				
7	0.629	3.313	78.804				
8	0.541	2.849	81.653				
9	0.519	2.730	84.382				
10	0.483	2.541	86.924				
11	0.415	2.185	89.108				
12	0.391	2.060	91.169				
13	0.350	1.843	93.012				
14	0.316	1.666	94.677				
15	0.281	1.479	96.156				
16	0.261	1.373	97.529				
17	0.219	1.151	98.680				
18	0.166	0.872	99.552				
19	0.085	0.448	100.000				

Extraction Method: Principal Component Analysis.

Source: By Authors, 2023

MEASUREMENT MODEL

The measurement model aimed to evaluate validity and reliability. Convergent reliability was evaluated by examining the composite reliability (CR) and Cronbach's alpha (CA). The results of all the CA tests ranged from 0.803 to 0.924, and the CR values ranged from 0.803 to 0.931 (Table 5). Both parameters were above the acceptable value of 0.7 [25]. Regarding validity, we evaluated both discriminant and convergent validity. Convergent validity was assessed using the average variance extracted (AVE) and factor loadings. The factor loading and AVE of each construct were higher than the cutoff value of 0.5 [26], showing high convergent validity. In addition, the square root of AVE for each construct was higher than its correlation coefficient with any other construct. Thus, the discriminant validity was acceptable.

TABLE 5. VALIDITY AND RELIABILITY OF VARIABLES

	CA	CR	AVE	PB	PE	PR	TP	UI
PB	**0.813**	0.819	0.531	**0.729**				
PE	**0.809**	0.814	0.523	0.528***	**0.723**			
PR	**0.803**	0.803	0.507	-0.435***	-0.236**	**0.712**		
TP	**0.836**	0.837	0.565	0.631***	0.555***	-0.592***	**0.751**	
UI	**0.924**	0.931	0.818	0.668***	0.664***	-0.534***	0.728***	**0.905**

CA, Cronbach's alpha; CR, composite reliability, AVE, average variance extracted. The bold diagonally are the square root of AVE. ** p < 0.010; *** p < 0.001

Source: By Authors, 2023

CONFIRMATORY FACTOR ANALYSIS – CFA

Subsequently, structural modeling was performed based on the measurement model. Several parameters were used to assess the overall goodness-of-fit of the hypothetical model [26]. As shown in Table 6, the results of structural equation modeling acquired from the proposed theoretical model revealed that CMIN/DF = 1.883 (p=0.000), GFI = 0.914, RMSEA = 0.060, RMR = 0.04, TLI = 0.944, CFI = 0.960. These fit statistical indices were all better than the recommended cutoff values, as shown in Table 6. The CMIN/DF ratio was lower than the recommended threshold value of 3. RMSEA was less than the recommended cutoff value of 0.08, and the RMR value was less than the recommended threshold of 0.05. Accordingly, most of the overall fit indices showed a good fit between the data and model.

TABLE 6. FIT INDICES FOR STRUCTURAL MODEL

Structural Model Statistic	Fit Indices	Recommended Threshold (Hooper et al., 2007)
CMIN	231.669	-
CMIN/DF	1.883	<3
GFI	0.914	>0.9
RMSEA	0.060	<0.08
RMR	0.04	<0.05
TLI	0.944	>0.9
CFI	0.960	>0.9

Source: By Authors, 2023

STRUCTURAL EQUATION MODELING – SEM ANALYSIS

Table 7 and Figure 3 present the results of the Structural Equation Modeling and hypothesis testing. Perceived ease of use (β = -0.344, p = 0.000) and perceived benefit (β = 0.227, p = 0.002) positively and significantly affected usage intention, whereas perceived risk negatively and significantly influenced usage intention (β = -0.189, p = 0.004). Trust in the provider positively and significantly influenced usage intention (β = 0.281, p = 0.000) and perceived benefit (β = 0.510, p = 0.000), but negatively influenced perceived risk (β = -0.677, p = 0.000). Perceived

ease of use significantly and positively affected perceived benefit (β = 0.241, p = 0.004), whereas the effect of perceived ease of use on perceived risk was not statistically significant (p = 0.128).

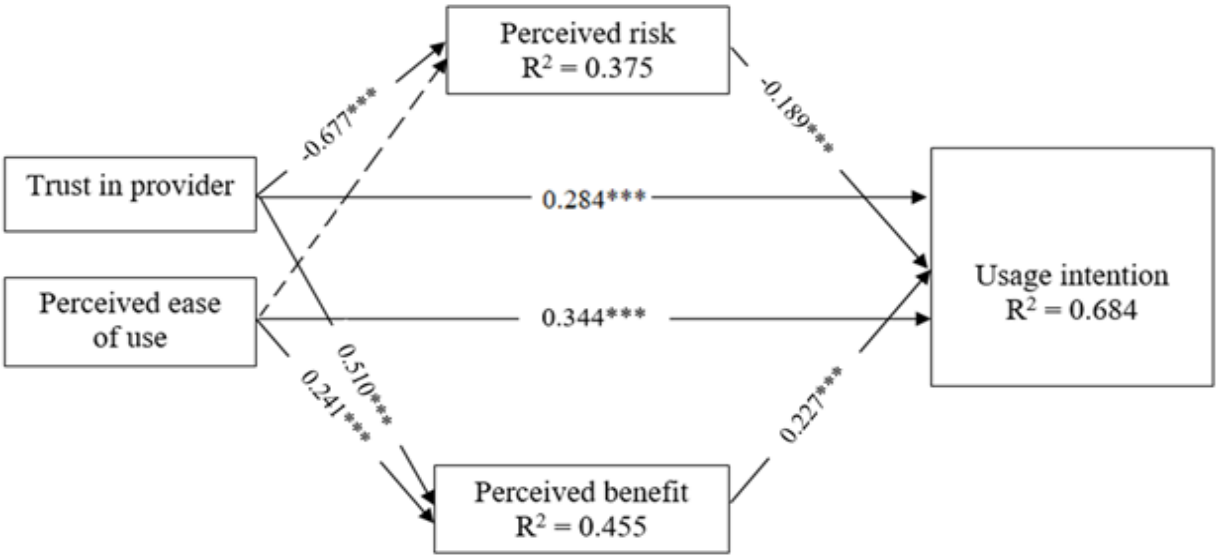
Overall, perceived ease of use, trust in provider, perceived benefit, and perceived risk significantly affected usage intention, and the structural model explained 68.4% of the variation in usage intention (R2 = 0.684). Trust in provider and perceived benefit significantly affected perceived benefit, and the structural model explained 45.5% of the variation in perceived benefit (R2 = 0.455). Only trust in the provider significantly affected perceived risk, which could explain 37.5% of the variation in perceived risk (R2 = 0.375).

TABLE 7. PATH COEFFICIENTS AND THE RESULT OF HYPOTHESES TEST

Hypotheses	Path coefficients	Significance	Findings
PE → UI	0.344	0.000	Supported
TP → UI	0.281	0.000	Supported
PB → UI	0.227	0.002	Supported
PR → UI	-0.189	0.004	Supported
PE → PB	0.241	0.004	Supported
PE → PR	0.135	0.128	Not Supported
TP → PB	0.510	0.000	Supported
TP → PR	-0.677	0.000	Supported

Source: By Authors, 2023

FIGURE 3. THE STRUCTURAL MODEL AND R2 VALUES



Dashed lines represent unsupported paths. *p < 0.05, **p < 0.01, *** p < 0.001. Source: By Authors, 2023

RESEARCH RESULTS DISCUSSION

This research investigated the factors influencing the behavioral intention of customers to accept and use telemedicine services. To the best of our knowledge, this is the first study on customer behavior toward adopting telemedicine services in Vietnam. The data collected significantly supported the proposed hypothetical model and provided a valuable understanding of the interdependence among trust in the provider, perceived ease of use, perceived risk, perceived benefit, and behavioral intention to adopt a new format of medical service. According to the SEM results, the model demonstrated a good fit and was beneficial for assessing and predicting customers' behavioral intentions.

The results supported the direct impact of trust in provider, perceived ease of use, perceived risk, and perceived benefit on usage intention, the direct influence of trust in provider on perceived risk and perceived benefit, and the direct impact of perceived ease of use on perceived benefit. However, the results showed that perceived ease of use affected perceived risk nonsignificantly. This unexpected finding could be attributed to the popularity

of smartphones and mobile technology in the society nowadays. The average perceived ease of use survey score was 3.9 (Table 2), which showed that most of the participants were capable of using telemedicine applications on smartphones and computers. Moreover, most attendants had a high educational background and lived in large cities. This explains why they learned how to use new mobile technology faster than average. Thus, perceived risks related to ease of use were not significant in the investigated population. However, perceived risks from other causes, such as doctor quality and security, were much more obvious for these people.

The results also indicated that well-educated and young people generally had positive perceptions of perceived ease of use (mean 3.9), perceived benefit (mean 4.2), and usage intention (mean 4.1). These results imply that a group of potential customers who appreciate the benefits of telemedicine and are ready to adopt this service has been formed in society. They are urban residents in the age range of 20 to 40 years, with a high educational background, busy lifestyle, and above-average income. Thus, service providers should target the customer segment based on these demographic characteristics.

Perceived ease of use and trust in the provider were the most significant direct antecedents of usage intentions. The empirical results of this study indicate that service providers need to build solid customer trust. Moreover, investing in technology platforms to improve the user experience (UX) and user interface (UI) should be prioritized to enhance customer acceptance [27]. In addition, consistent with previous studies, the positive effect of trust in a provider on usage intention is partly mediated by perceived benefit and perceived risk. Trust in the provider strongly influenced perceived risk and perceived benefit, whereas perceived ease of use only significantly affected perceived benefit. In addition, Davis et al. (1989) also found that users are more likely to accept a new IT product if they think that the system is useful regardless of whether they like it. These findings also imply that trust in a provider plays a key role in customers' decision-making process. Accordingly, the service provider should focus on improving customer trust through appropriate practices, such as publicizing doctor information, cultivating doctor - patient and service provider - patient relationships through communication and media activities, in-person consultation events, and CSR activities. The service provider must strictly comply with the regulations and ethical standards in telemedicine to avoid harmful consequences and mitigate the risk of losing trust from the customer.

RESEARCH LIMITATIONS AND FURTHER RESEARCH DIRECTIONS

In this study, we used behavioral intention as the dependent construct instead of actual usage behavior. Although this approach is appropriate for investigating new technologies that have not been popular in society, it cannot explain actual usage behavior. Theoretically, this study integrated the technology acceptance model (TAM) and the extended valence framework to provide an efficient behavioral model for understanding customer's intention to use telemedicine service. The hypothetical framework went further than the original TAM by integrating the relationships among trust in providers, technological factors (perceived ease of use), perceived risk - benefit and usage intention. The proposed model was indicated to be valuable for assessing and finding solutions to positively influence the usage intention of telemedicine service as it provided a theoretical model that helps to understand the relationships among these constructs. The results indicated statistically significant causal effects of trust in provider, perceived ease of use, perceived risk and perceived benefit on usage intention; influence of trust in provider on perceived risk and perceived benefit, and also direct impact of perceived ease of use on the perceived benefit. The participants of this study mostly belonged to the middle – high social class who were well educated, young – middle age (< 40 years old), lived in big cities, and had middle – high income. Thus, they have more capabilities to adopt new technologies than the average population. Further research should include populations with more diversified demographic characteristics, especially older people, residents living in rural areas, lower income, and educational background. Telemedicine service providers can target the middle – high social class in the early stages. However, they also need to cover the lower class in society because they are more crowded and more likely to benefit from telemedicine services. Future research investigating actual telemedicine usage in real business circumstances will provide more comprehensive insights into this model for evaluating and predicting the level of customer acceptance. These studies could be implemented when telemedicine services become more popular in society.

The provision of medical services is being transformed by advanced technologies such as e-health, telehealth, and

telemedicine. The increasing adoption of telemedicine is in light of the big trends of digitalization and globalization in medicine. Telemedicine not only represents the future of medical practicing, it is currently a primary means of expanding care to those with limited access to physicians. To be truly patient centered, healthcare must be affordable and accessible. Growing evidence of telemedicine's effectiveness is encouraging; however, more research is needed on the impact of telemedicine on cost, quality, access, and patient experience. There is no doubt that telemedicine will continue to increase in popularity. Technically, IT platforms and infrastructure dedicated to telemedicine are underdeveloped in Vietnam. Although this kind of medical service is very popular worldwide, its social acceptance in Vietnam is still limited. Telemedicine providers need to overcome existing barriers and improve the business model, service design, technology, marketing strategy, and customer relationships to be successful in this business field. This study can serve as a foundation for further action to build, develop, and popularize telemedicine services in Vietnam. Future research could continue to explore other factors that influence customers' decisions to adopt telemedicine. We hope that this research will provide realistic values to practitioners, service providers, and scholars.

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ETHICAL APPROVAL:

This research has received no grant or relevant data from any organization.

On the basis of "Regulations on integrity rules in scientific research at University of Economics Ho Chi Minh City (UEH) in 2019" (No. 3145/QyĐ-ĐHKT-QLKHHTQT), this study was conducted in line with the mentioned requirements. We also got ethical approval from the Ethical Committee of University of Economics Ho Chi Minh City (UEH). Specifically, the respondents' anonymity was strongly guaranteed. Support was totally deliberate, and the participants' responses would be utilized solely for scholarly purposes.

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RESEARCH ARTICLE

AUSTRALIAN RESIDENTIAL AGED CARE FACILITIES MANAGERS' AND NURSES' EXPERIENCES IN IMPLEMENTING TELEHEALTH AND SOCIAL CONNECTION DURING COVID-19

Annie Banbury[*1,2], *Monica Taylor* [1,2], *Natasha Reid*[1], *Anthony Smith*[1,2], *David Paterson*[3], *Leonard Gray*[3]

1. Centre for Health Services Research, The University of Queensland, Brisbane, 4102, Australia
2. Centre for Online Health at the Centre for Health Services Research, The University of Queensland, Brisbane, 4102, Australia,
3. Centre for Clinical Research, The University of Queensland, Brisbane, 4102, Australia

Correspondence: annie.banbury@uq.edu.au

ABSTRACT

INTRODUCTION

Residential aged care facility (RACF) residents are highly vulnerable to severe infection and death from COVID-19. During the pandemic, telehealth (telephone and video) provided a mechanism to deliver for health care and social support. We examined logistical factors associated with telehealth, reasons for its use and barriers associated with the choice of telehealth.

METHODS

A mixed method exploratory study. Quantitative data were analysed using descriptive statistics. Qualitative data were analysed using a hybrid framework approach; deductive analysis followed by inductive analysis for sub-themes.

RESULTS

Participants (n=19) reported an increase in telehealth use during COVID-19. Organisations bought new equipment, predominately tablets; half had internet connectivity difficulties; nurses used personal devices to overcome connectivity issues or inadequate devices and 74% used three or more platforms/software. Few residents had personal digital devices or could connect with family and friends alone.

Five key sub-themes emerged from qualitative data. 1. Needing and persisting with telehealth. RACFs had limited video telehealth use before COVID-19. 2. Being dependent on health providers offering telehealth services. Telehealth was used for a broad range of services. However, many health providers did not offer telehealth consultations. 3 Residents living with dementia. Telehealth was suitable for residents with dementia, depending on the disease stage and clinical need. 4. Challenges with implementing telehealth consultations. Most challenges pertained to workflows. 5. Suitability of videoconferencing for social connection. Staff supported residents with video calls which were highly valued.

CONCLUSION

To capitalise on and sustain telehealth activity in RACFs, further guidance and support to overcome operational barriers are required.

KEYWORDS
telemedicine, workflow, residential aged care facilities, nursing homes,

INTRODUCTION

The 2019 Coronavirus (COVID-19) pandemic has led to additional challenges for the aged care sector, particularly for residential aged care facilities (RACFs), where the threat and severity of COVID-19 are extremely high. Aged care residents, particularly those over 85 years of age, are a highly vulnerable group at risk of serious infection and death from the disease, so the risk of transmission needs to be mitigated where possible [1, 2].

In Australia, social distancing health policies and visitor restrictions have been implemented at varying times across facilities to reduce the risk of transmission. In addition to the issues caused by COVID-19, these strategies to prevent or mitigate transmission have also resulted in several unintended non-COVID consequences that are relevant to older people. These include but are not limited to, delaying the presentation, management and treatment of other acute medical issues, postponement of elective surgeries, poorer physical and mental health, social isolation, depression, and anxiety [3].

Without doubt, COVID-19 and cross-infection rates within RACFs during the pandemic have highlighted systemic and pre-existing issues within the broader aged care sector [4]. A new industry code for visiting RACFs [5] and the Royal Commission's Aged Care Quality and Safety report on the impact of COVID-19 and Final Report: Care, Dignity and Respect [6, 7] recommend the use of telehealth, defined as healthcare services provided at a distance using information and communications technology [8], to mitigate both the risk of transmission, access to services, and the effects of social isolation on RACF residents.

The COVID-19 pandemic and changes to funding via Medicare rebates have resulted in an increase in the uptake of telehealth services in general, the extent to which these have been adopted within RACFs in Australia during the pandemic is unclear [9]. Telehealth (telephone, video or remote monitoring) can have multiple purposes, including healthcare appointments, staff training and support, triage (hospital avoidance), and social support [10]. Various strategies have been used to help encourage the use of telehealth, including funding incentives, infrastructure grants, and training. As part of the pandemic response, we delivered a telehealth training program by videoconference to support health professionals working in selected RACFs. This study included a post-training investigation to understand logistical factors associated with telehealth (technology options and clinician perception of suitability); reasons for using telehealth (clinical, educational, social); and any specific barriers associated with the choice to use telehealth within these RACFs.

METHODS

DESIGN AND SETTING

We used a mixed-method exploratory study design. At the start of the pandemic during April and May 2020, 84 senior managers at RACFs within Queensland Health's Metro South Hospital and Health Service were invited to participate in voluntary training through a hospital-based telehealth centre. Training was provided by video, using Zoom [11] to senior managers or nominated staff at 53 RACFs. The 20-minute training session included how to connect the Queensland Health Telehealth Portal to access health services during COVID-19 lockdown restrictions.

PARTICIPANTS

All facilities that took part in the 20-minute training session formed the basis of our convenience sample. The sample included eight organisations with multiple facilities (n=25). A list of key contacts from the facilities who were senior staff or who took part in the training was compiled.

ETHICS

Individual participants were provided with participant information sheets, and informed consent was obtained in accordance with the ethical approval by The University of Queensland Human Research Ethics Committee (Approval No. 2020002172).

DATA COLLECTION

In September 2020, key contacts (n=39) who had received training were invited to participate in the study. Study information and consent were emailed with researchers

following up by telephone or organising semi-structured interviews by email or telephone. To ensure a variety of organisations were represented within the sample, one facility of each organisation that had undertaken training was approached. The Telehealth Program Pathway [12] was used to guide the development of interview questions.

TABLE 1: THE TELEHEALTH PROGRAM PATHWAY FRAMEWORK [12]

Telehealth Program Pathway Framework	
Telehealth Component	Description
Service Design	Residential aged care facility and residents' characteristics and external health care providers
Technology	Resources required to deliver telehealth activity including hardware, platforms/software, connectivity,
Operations, Adoption and Engagement	Actions required for telehealth uptake (organisational readiness, personnel, referral process, patient flow, speciality use, ease and willingness of use, barriers/challenges, facilitators/enablers, workflow integration)
Outcomes and impact on organisations, staff and residents	Perception of telehealth activity on intermediate outcomes and overall impact on staff, residents and the organisation (capacity to engage, satisfaction, workload, changes in role)

Research questions included demographic and organisation information, types of technology used before and during the pandemic, operational aspects of telehealth e.g. workflows, barriers and facilitators, perceptions of outcomes on staff and residents and training required to sustain telehealth use.

Interviews were conducted by experienced telehealth and aged care researchers AB, MT and NR and recorded using Zoom, and Otter.ai [13] generated automated transcriptions. Researchers compared notes on the appropriateness of interview questions after initial interviews and minor amendments were made. Interviews averaged 45 minutes and continued until data saturation, when no new themes were identified. Transcriptions were read through and checked for accuracy against recordings, de-identified and stored according to ethics requirements. Quantitative data on staff and residents' characteristics and the types of devices and telehealth platforms used before and during the pandemic were captured using Qualtrics [14] online survey software by the researchers.

QUANTITATIVE DATA ANALYSIS

Descriptive statistics were conducted to investigate primary variables of interest in the quantitative data including demographics of RACFs, telehealth hardware and software, and participant perceptions of residents' ability to use technology.

QUALITATIVE DATA ANALYSIS

We used a hybrid approach of qualitative thematic analysis methods [15] using Nvivo [16]. Firstly, transcripts were read through, and a deductive approach was used, where data were extracted according to the framework components (technology, operations, adoption and engagement by AB. Second, inductive coding (AB, MT) thematically identified sub-themes within each component of the Telehealth Program Pathway Framework. These sub-themes were shared regularly with team members for peer discussion, refinement, and agreement. This study reports on the technology used, how telehealth was operationalised within RACFs, the adoption process and participants' perception of staff's engagement with telehealth.

RESULTS

PARTICIPANTS

In total, 21 participants from RACFs took part in the study. However, two automated transcriptions were not of sufficient quality to be included in the analysis. Seventeen of the 19 participants with viable information had senior nursing roles (Table 2). For those who were approached but did not take part, most participants reported they were "too busy".

TABLE 2: PARTICIPANT CHARACTERISTICS

Position Title	N (%)
Head of Care/Director of Care/Nursing	3 (16)
Clinical Care Consultant/Coordinator	4 (21)
Care/Facility/Clinical Manager	10 (53)
Clinical Nurse/Registered Nurse	2 (10)
Total	**19**

Of the 19 facilities with available information, 11 were not-for-profit and eight were private for-profit. On average there were 87 beds per facility (range 42-140). Respite care was provided by 95% (n=18), 72% (n=8) provided low-care beds and 21% (n=4) provided short-term care. All facilities were located in the city of Brisbane. Prior to COVID-19, residents had in-person access to a range of primary and secondary care practitioners.

TECHNOLOGY

Technology use

All participants reported increased use of digital communication devices since the onset of COVID-19. Before COVID-19 restrictions, the telephone (42%) was the most used device. Due to the pandemic, organisations purchased new equipment for residents to access health services provided by an external health provider. Residents would have accessed these health services in person before the pandemic. (Figure 1).

Facilities had increased their telehealth use despite experiencing problems accessing appropriate telehealth equipment or reliable internet connectivity. Participants reported that nurses occasionally used their own devices to overcome the lack of appropriate devices or network connectivity (Wi-Fi) difficulties within the RACF. This included using personal phones to send images to wound specialists for treatment advice.

Half of all participants reported difficulty with internet connectivity. Old buildings with poor wi-fi access, increased internet traffic, and firewalls significantly contributed to the problem. One participant reported installing boosters throughout the facility to overcome connection issues and known blind spots.

Participants were asked which platform or software they had used since the beginning of the pandemic for videoconferencing purposes (Figure 2). In total, 74% of participants reported using three or more platforms to connect with care providers.

The external health care provider liaised with RACF staff by telephone to organise a telehealth consultation with the resident. Following this, external health providers sent the telehealth consultation link to the RACF, thereby determining which software applications (herewith referred to as software) were used. Consequently, RACFs were forced to adapt and use a range of systems. When difficulties occurred, participants reported trying different devices and software until they found one that worked in their environment. The rapid uptake of telehealth required staff to troubleshoot multiple systems.

Broader use of telehealth, such as remote monitoring, was reported by only one participant. The majority of participants (73%) perceived a third or more residents could participate in a telehealth consultation (Figure 3)

FIGURE 1: DIGITAL DEVICE USE IN RACFS (N=19)

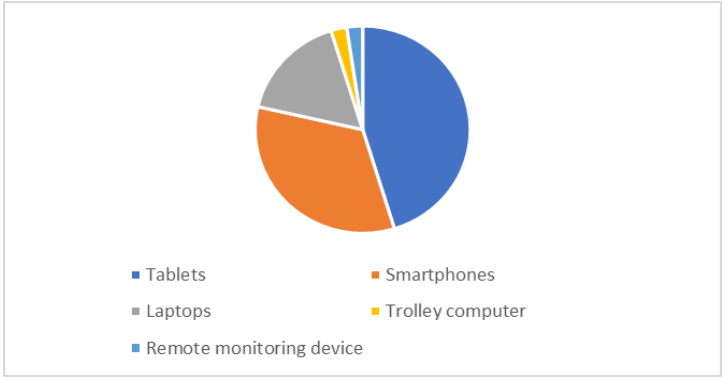
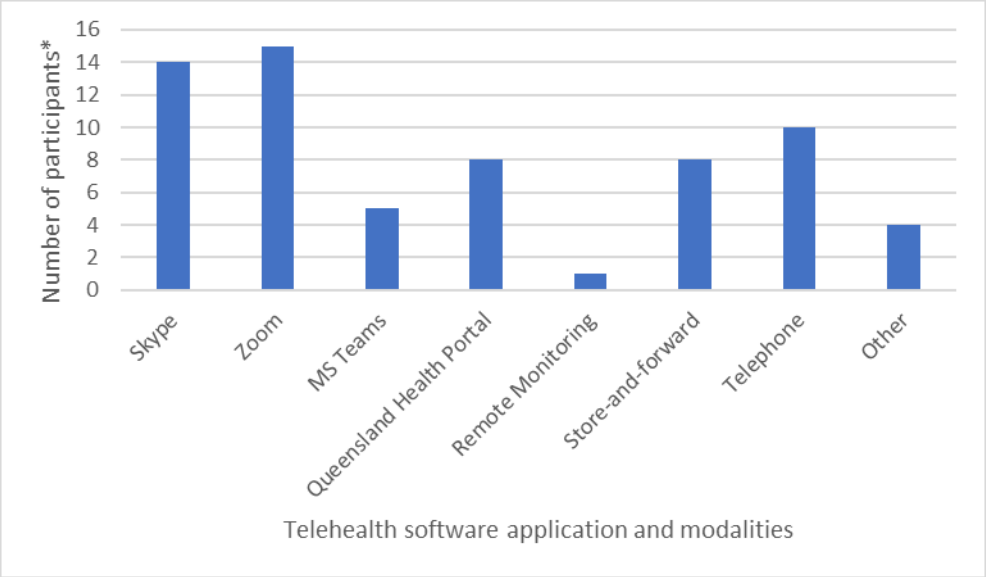
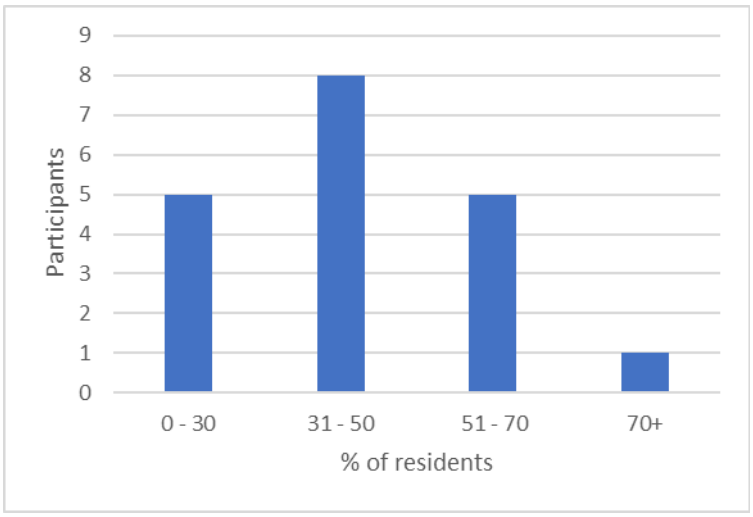


FIGURE 2: TELEHEALTH SOFTWARE APPLICATIONS AND MODALITIES USED DURING COVID-19 (N=19)



Other: Health direct Videocall, FaceTime, Google Meets

FIGURE 3: PARTICIPANT'S PERCEPTIONS OF THE PERCENTAGE OF RESIDENTS WHO COULD TAKE PART IN A VIDEO TELEHEALTH CONSULTATION (N=19)



In total 68% (n=13) perceived less than 10% of residents had access to a personal digital device or were able to connect with family and friends by themselves.

OPERATIONS, ADOPTION, AND ENGAGEMENT

Five themes emerged that illustrated the operational, adoption and engagement experiences of RACF staff when using telehealth during lockdown restrictions: need and persistence; dependence on healthcare providers offering telehealth; residents with dementia; challenges with telehealth consultations; and digital device use for social support.

Needing and persisting with telehealth

COVID-19 resulted in the rapid uptake of telehealth in most RACFs, mainly due to necessity. Of those interviewed, 63% (n=12) had very limited or no use of video telehealth prior to COVID-19. Visiting restrictions, lockdowns, absence of in-person clinician visits, and external healthcare providers offering telehealth appointments for the first time, influenced its adoption. In general, participants reported telehealth to be useful.

Initial telehealth appointments were only sometimes successful. However, the restrictions meant staff persisted and developed solutions even when problems occurred.

Being dependent on health providers offering telehealth services

It was reported most general practitioners (GPs) continued to provide in-person consultations during restrictions. Only

one facility reported a GP using video, others used the telephone.

Telehealth was most often used for wound care, palliative care, and specialist consultations. Wound care support, by either sharing images of wounds (store and forward) or during a telehealth consultation, was the most reported telehealth activity prior to and during COVID-19 restrictions. Participants reported sharing images by email.

Palliative care telehealth services offered by the local Palliative Care Service catalysed many RACFs to try telehealth for the first time. Telehealth specialist consultations included geriatrics, neurology, orthopaedics, dermatology, oncology, cardiology, pathology, dementia behaviour management, lymphedema, diabetes and urology. In addition, outpatient appointments and a case conference that included family members were also reported. Despite a range of specialist appointments taking place by telehealth, the vast majority of specialists were not participating in or offering such a service.

Residents living with dementia

There were conflicting views on using telehealth for residents living with dementia. Some felt that telehealth was unsuitable for a consultation with people in the moderate to advanced stages of dementia. However, telehealth was considered suitable for residents in the early stages of dementia, who can join in conversations. For those living with advanced dementia, telehealth was considered appropriate to assess cognitive function, make clinical observations and examine wounds.

Participants reported telehealth can be used for residents living with dementia to avoid transfers to hospitals, which can be upsetting and cause agitation. Participants expressed concern regarding residents who attended hospital appointments without family members and RACF nursing staff familiar with their condition, making it difficult or impossible to obtain a comprehensive medical history. In a telehealth consultation, RACF nurses were available to provide detailed and more accurate clinical information, which they reported, could lead to better health outcomes for the residents.

Challenges with implementing telehealth consultations

Participants reported few difficulties during telehealth consultations once connectivity was established and maintained. However, there were practical challenges including residents not being able to hear the health care provider and positioning residents as directed during the consultation.

The most reported difficulty with telehealth appointments was scheduling issues. Nurses attending a telehealth appointment was sometimes viewed as 'taking people off the floor' and additional work compared to when a doctor visited in person. This was exacerbated if consultations did not run on time, either starting late or lasting significant amounts of time. Staff telephoned external health care providers for an appointment, who sent a link for the telehealth consultation. Issues with multiple consultations simultaneously, and scheduling staff to attend and engage with external healthcare providers all required new workflows. One facility that had successfully modified workflows reported telehealth as being more time-efficient when compared to in-person visits.

Documentation processes with GPs were cumbersome, with neither organisation having efficient sharing methods nor storing relevant documentation from different service providers. RACF nurses collected and reported vital sign readings to GPs via the telephone. Faxes and emails were commonly used for documentation transfer between practitioners and the RACFs.

Organisations that had developed successful workflows with an e-record system reported healthcare providers sending documentation via email, which was then uploaded to residents' files. Some organisations documented telehealth consultations for their records. Those new to telehealth reported that telehealth documentation required additional nurse time compared to an in-person consultation, as GPs usually completed paperwork themselves. In addition, one participant said medication or care plan changes required an original doctor's signature, rather than a digital signature, leading to faxing paperwork back and forth between GPs and the RACF.

For in-person specialist and hospital outpatient appointments, follow-up documentation from hospital healthcare providers was consistently not received in a timely manner, and often required prompts from RACF staff to obtain the information. Some participants reported that they received even less documentation from telehealth appointments compared to in-person appointments, indicating issues with information management and access to records.

Suitability of videoconferencing for social connection

All RACFs provided access to a facility-owned digital device for residents to connect with family members. Video calls by mobile telephones and tablets used a variety of software which were commonly the same as those used for a clinical consultation e.g. Zoom, Skype, FaceTime. Different software used only for social calls included WhatsApp and Care App.

Using video calls for social connection before the pandemic was uncommon. Participants reported family members had requested assistance from RACF staff to help their loved one participate in a video call. Video calls enabled families to see their loved ones and ease their concerns about their safety during the pandemic. In some cases, video calls were new for family members and in one facility staff had to provide technical support for family members to connect with a resident.

Staff reported that although visiting restrictions have been lifted, video calls with families were still occurring routinely. Similar to clinical consultations, many facilities developed a booking system to schedule appointments between residents and family members. Diversional therapists or lifestyle support workers, if facilities employed them, coordinated calls and liaised with families. They reported that most residents required help in starting a video call but depending on the resident's capabilities, some could be left to participate by themselves. Others with cognitive decline needed a member of staff to stay with them. In addition, participants reported that some residents, particularly those with advanced dementia, were not able to make sense of who was on the screen and video calls could cause difficulties.

Overall, RACFs were happy to support residents using video calls to connect with family members even though it required staff time to facilitate. Some participants felt volunteers could support this role when RACFs did not have visitor restrictions.

TABLE 3 – PARTICIPANT QUOTES

Technology used
"So the biggest block for us prior [to COVID-19] was the technology, we just didn't even have the tablets. So [organisation name] were able to provide us with tablets early on when the COVID crisis came into play. So prior to that, we actually we only had a limited number of tablets. So it wasn't easy to access that kind of communication." - P7
"We have smartphones, but many are not working smartphones... so they [nurses] use their own phone as we don't have enough smartphones for photos." - P6
"…it kept dropping out, it was useless. This is a very old building, the connectivity is not that flash. We started with Skype but it kept dropping out, so we used FaceTime". - P 4
"The internet connection would be an initial barrier but we did boosters in the whole facility, so our IT has sort of solved that one, especially the blind spots in the rooms." - P14
Need and persistence
"It was limited before COVID. We just did phone calls rather than telehealth. There has been a huge change because of COVID and the restrictions of our lockdown. It certainly opened our eyes to see how good it was and what a time saver it can be." – P7
"The palliative care team could not come in. So they offered to use telehealth… it was great…First attempt did not go well. But the following worked every time." – P1
Dependent on health providers offering telehealth
"Some specialist providers weren't interested and would just prefer a voice call. But others who were willing to use telehealth didn't have any problems." - P7
"We've never actually been offered the telehealth option for a specialist appointment" - P12
Residents living with dementia

"I think we provide more information than sending someone to a hospital who's got low level of dementia and may not remember they fell three months ago - I think we potentially could have better outcomes." - P10
"A challenge for some people with dementia is going to an inpatient, outpatient appointment or a doctor's surgery and waiting. It can be really distressing - they don't know where they are, there's lots of stimuli around them, they can struggle and become quite agitated by it. Now that we have started to access care by telehealth - I can only see that continuing post COVID." - P13
Challenges with telehealth consultations
"I think it's just that it takes someone off the floor. When you do a doctor's round, you can run around quickly and get your work done, but [with telehealth] you have to set up time if somebody else is wanting to use the device and all that sort of stuff. So it would have to be scheduled, you'd have to have someone organised to be just doing that." - P8
"We need to work out the allocation for staffing to accommodate the needs. For example, if we have five residents or 10 residents that need to do a telehealth conference on the same day, how are we able to allocate the staff to accommodate each of them? What if they are the same time, can you spread them out during the day, reschedule to a different day? This will be the duty for the registered nurse and a care coordinator." P17
"There hasn't been a huge change in staff allocation...it's not always about time, if we get enough notice we have time to organise and if their appointment is this morning and we hear about it the day before, the RN will arrange everything for the morning staff… We realised this isn't difficult and you actually save time. Previously RNs said we don't have time to wait on the phone but slowly they realised it is better than waiting for the doctor to come - you book an appointment and do it." - P16
"Sometimes we get a discharge summary [from an in-person appointment]. Sometimes we still don't if it's an outpatient appointment, but we're finding we're getting them less if it has been anything related to telehealth." - P10
"I update the vital signs and consents to the doctor on the telephone, then she talks to the resident or family member and then I send the medication chart to her clinic and she reviews it and faxes back." - P6
"By telehealth or phone, changes in medication, restraints or a diabetic management plan update – they need to be done on the computer or we have to go backwards and forwards via the fax to have a doctor's notes". - P10
Videoconferencing for social connection
"When families couldn't come in, we set up Skype sessions. This requires a staff member when the resident cannot hold the iPad. However, we've other residents who we just take the iPad to, make sure they've got a connection and leave them to it. Staff go back to disconnect -that's not so time-consuming - five minutes total." P13
"There has been a couple of family members who have really pushed us. They have gone out and brought some devices and they are continuing to do it now that we're open…When it works, it works beautifully. And if it doesn't work, it just causes chaos." P10
"…I think for some. Others, it's been more driven by us because that makes them understand we can do it now. We are finding that some have been driven by the family, but it's mostly driven by us here. P5

DISCUSSION

This study explored the experience of videoconferencing for telehealth (clinical and social connections) in RACFs during COVID-19. During this timeframe, telehealth activity increased and was used for a broad range of consultations. Organisations purchased technology to support telehealth however, internet connectivity within the facility was often a reported limitation. Despite facing technological challenges, RACF staff persisted in using telehealth. Another reported barrier to telehealth use was the experience that not all health providers were willing to offer

telehealth services. For residents with dementia, the choice to use telehealth also depended on clinical requirements and the stage of the disease. Other challenges associated with telehealth uptake involved necessary changes to business processes, such as revised referral processes, documentation, scheduling, and staffing processes.

VIDEO TELEHEALTH FOR CLINICAL CARE

The benefits of using telehealth to provide care for older adults are widely reported [17]. Wardlow's large-scale survey on telehealth use across clinical roles, settings and purposes with older adults concluded that perceived advantages outweighed the challenges. Our study has similar findings in an Australian context, with telehealth viewed as supporting future healthcare delivery by reducing travel, hospital transfers, improving patient histories, and ensuring better access to more timely care.

RACF staff increased their use of telehealth due to COVID-19 restrictions. Organisations invested in new technology, particularly tablets, for a broad range of clinical consultations, however many require additional equipment and or better connectivity for its continued use [18]. Of concern were reports of staff using personal devices for telehealth consultations and sending resident images via email. Devices and software that do not have end-to-end encryption, pose a serious security risk as confidential data may be accessed by external parties [19].

Telehealth imposes a burden on case preparation and hosting for RACFs. Consistent with previous literature a key concern was the additional nursing and coordination time required [20, 21] which adds to existing high levels of stress that staff in RACFs face [22]. Some organisations have successfully integrated telehealth into routine care. However, to achieve widespread adoption across the aged care sector, staff require fit-for-purpose technology, best practice guidelines and case studies showcasing examples of successfully overcoming implementation barriers and how to integrate telehealth into daily workflows [23].

Telehealth can potentially improve access to care for all residents including those living with dementia. However, developing a telehealth ecosystem where external health practitioners are willing to provide telehealth consultations is required. Our study reported that few specialists provided telehealth consultations and GPs continued to provide care in person. If GPs used telehealth, it was via the telephone. Medicare funding data indicates 95% of the telehealth payment claims by GPs were for telephone calls rather than video calls [24], confirming these findings. There is evidence that video consultations are of higher quality compared to telephone consultations [25] but it has been suggested to increase the uptake of video with GPs, further evidence is required [26].

The solution to overcome the telehealth implementation barriers extends further than just workforce and technology issues [27]. To maximise the utilisation of new skills, motivation, and knowledge gained during the pandemic, it is essential to address regulatory, training and financial barriers. A lack of evidence on the return on investment that can be achieved by implementing telehealth within the aged care sector hinders aged care providers' willingness to invest in technology [9]. Recent government funding to support telehealth in RACFs [28] is welcomed, but whether this on-off funding can maintain fit-for-purpose telehealth infrastructure and motivate staff and external providers to embed telehealth into care practice remains to be seen. To sustain telehealth's use within Australian aged care facilities, current funding models need revising to include payment for health professionals' time to support telehealth and training to facilitate high-quality consultations.

VIDEOCONFERENCING FOR SOCIAL CONNECTION

Similar to other international studies, videoconferencing for social connectivity between residents and family members was highly valued [27, 29]. RACFs reported continuing to facilitate videoconferencing calls after restrictions had finished. However, most residents and some family members need support in using digital devices which adds to the existing time pressures on staff. To address this, some had developed a booking system for device use and scheduling calls administered by non-clinical staff and volunteers. Phang et al's recent review of digital intergenerational programs to reduce loneliness and social isolation among older adults included several studies using videoconferencing with families [30]. The review highlighted the importance of developing targeted programs specifically for RACF residents to ensure successful outcomes. There is significant potential in using digital devices for innovative social connection models in RACFs, such as connecting residents with students [30]. However, RACFs must have a sustainable model to support resident and potentially family member use of digital devices. Examples of good best practice guidelines on

using digital devices for social connection in aged care would be advantageous.

STRENGTHS AND LIMITATIONS

A limitation of this study is its inclusion of RACFs who received telehealth training; therefore, the findings may not be generalisable. Another limitation of this study is that RACFs were in a metropolitan area. Experiences of RACFs in rural and remote areas may differ. A strength of our study was the inclusion of a mix of private and public facilities of different sizes and numbers of beds. In addition, participants ranged from those with hands-on telehealth, managers, and clinical and administrative directors.

CONCLUSION

This study investigated the telehealth experience of RACF staff during the pandemic. Whilst there were many positive examples of how residents were able to access telehealth consultations with health providers and engage (by video) with family members, it's clear that challenges still exist for the routine use of telehealth. As technical infrastructure within RACFs improves, it is important that practical training is provided to support staff involved in the delivery of telehealth, and the broader organisational requirements (such as business processes, policy reform and funding) are fit for purpose.

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CONFLICT OF INTEREST STATEMENT:

The authors have no conflicts of interest to declare.

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RESEARCH ARTICLE

COVID-19 VACCINE HESITANCY AND SOCIAL MEDIA USE: A LESSON LEARNT FROM PANDEMIC

Binh Thang Tran[1], Thi Dang Thu Nguyen[1]*, Vo Nu Hong Duc[1], Cao Khoa Dang[1], Thi Thanh Nhan Tran[1], Duc Dan Nguyen[1], Hong Tram Nguyen[1], Minh Duy Ho[2], Thi Bich Thuy Le[1], Van Vui Tran[1], Van Hung Nguyen[1]*

1. Faculty of Public Health, University of Medicine and Pharmacy, Hue University, Hue city, Vietnam.
2. Center for Disease Control of Thua Thien Hue Province, Hue city, Vietnam

Correspondence: tranbinhthang@hueuni.edu.vn; tbthang@huemed-univ.edu.vn

ABSTRACT

OBJECTIVE:

This study aims to assess the level of COVID-19 vaccine hesitancy among Vietnamese adults and examine the relationship between social media use and vaccine hesitancy.

METHODS:

A cross-sectional study was conducted from July 26 to August 10, 2021, using an online survey of 702 Vietnamese adults. The Oxford COVID-19 vaccine hesitancy scale was used to measure vaccine hesitancy. A linear regression model was used to analyze the factors associated with vaccine hesitancy.

RESULTS:

Our study found that 15.1% of respondents were hesitant about receiving the COVID-19 vaccine, with an average hesitancy score of 9.52±2.66. Students and the unemployed had higher levels of hesitancy (B=0.58; 95%CI=0.02-1.15; p=0.043 and B=1.59; 95%CI=0.41-2.76, p=0.008, respectively. Hesitancy was also significantly associated with receiving positive information from social media (Facebook, Zalo) (B=-0.31; 95%CI=0.5 to -0.12; p=0.001) and trust in social media information (B=-0.45; 95%CI=-0.72 to -0.19; p=0.001).

CONCLUSION:

The results of this study highlight the need for targeted interventions to address vaccine hesitancy among Vietnamese people, particularly in the context of the shortage of vaccines and low public trust in 2021 and its practical evidence for future preparation in emerging pandemics.

KEYWORDS

COVID-19, vaccine hesitancy, social media, shortage of vaccination, public trust.

INTRODUCTION

Like other nations, Vietnam has been badly impacted by the COVID-19 pandemic. The virus was first discovered in Wuhan, China in December 2019 and quickly spread globally, leading to a worldwide health crisis [1]. To reduce the severity of the disease, vaccine development, and distribution was a top priority for many countries, including Vietnam [2].

In the context of the pandemic, social distancing and isolation policies have made the internet an effective tool for providing information to the public quickly and accurately. Social networks play an important role in this context, helping to disseminate information related to the pandemic and provide it quickly and effectively [3]. However, due to its speed and efficiency, it also led to misinformation and contributed to the spread of "infodemics" or false information that undermines public trust [4, 5].

During the early stages of the pandemic, when vaccine resources were scarce, vaccines were only available for priority groups such as frontline healthcare workers, people with chronic diseases, and the elderly. The source of vaccines and their effectiveness was a source of confusion and uncertainty due to misleading information. This led to hesitation among people when deciding whether to be vaccinated [6,7]. Vaccination hesitancy refers to the reluctance or refusal to be vaccinated, even when vaccines are available and recommended, and is one of the major challenges in vaccine compliance during pandemics. Various factors explain this, such as fear of side effects, lack of trust in vaccines, misinformation, media influence during the pandemic, and the role of pharmaceutical companies [3].

The relationship between COVID-19 vaccine hesitancy and social media is complex. Social networks can spread false information through attention-grabbing headlines or biased opinions, which can influence how users perceive data [8]. Misinformation about the vaccine can increase hesitancy, and it's widely spread on social media. News about severe side effects of the vaccine can also cause fear and anxiety [9]. To combat hesitancy, sharing official information from reputable sources is important. Such information can increase awareness of the vaccine's safety and efficacy and ultimately reduce hesitancy [8] but it remains limited in Vietnam.

Despite the ongoing COVID-19 pandemic and the potential for COVID-19 to become a common illness like the seasonal flu, vaccination must continue to increase herd immunity and reduce the risk of severe illness. Understanding the relationship between vaccine hesitancy and social media use is crucial to identify effective strategies. This study aims to examine the relationship between hesitancy towards COVID-19 vaccines and social media in Vietnam in the context of vaccine shortages and low public confidence during the Vietnam COVID-19 pandemic of 2021. Although the pandemic is now in the past, the findings provide valuable lessons that can be learned to better prepare for future emerging diseases.

MATERIALS AND METHODS

STUDY DESIGNS

A cross-sectional study was conducted from July 26, 2021, to August 15, 2021, through the online platform. A Google form survey was created and distributed to participants via the social media channels such as Zalo, Facebook. The snowball technique was approached to attract the people joining in this study. The Self Reporting Questionnaire has been developed using the Google form as an instrument designed to collect information.

Respondents who met the following inclusion criteria joined in this study: (1) being at least 18 years old; (2) a Vietnamese citizen and currently residing in Vietnam; (3) ability to access the internet and answering the question by themselves. At the end of the data collection period, a total of 702 people had participated in this study.

CONTEXT OF STUDY

COVID-19: Brief the time and COVID-19 situation [10,11]: Looking back at the history of Vietnam since the first case was reported in Wuhan, China, we can see that Vietnam witnessed a victory in the early period of the pandemic with no deaths in seven months. However, as time passed, up until the fourth wave of the pandemic, Vietnam was severely impacted. In summary, there have been four waves of the COVID-19 pandemic in Vietnam. The first wave occurred from January 23 to April 16, 2020, and resulted in 100 cases but no deaths. The second wave took place from July 25 to December 1, 2020, with 554 cases and 35 deaths. The third wave occurred from January 28 to March 25, 2021, with 910 cases but no deaths. The fourth wave began on April 27, 2021, and was also the most severe wave, with the number of COVID-19 infections

reaching nearly 400,000 people and close to 10,000 deaths. The country returned to a new normal in early 2022.

As of August 12, 2021, Vietnam recorded a total of 601,349 COVID-19 cases and 15,018 deaths, with the largest economic city, Ho Chi Minh City, accounting for 58% of infection cases and 80% of the national death toll.

COVID-19 vaccines: As of August 15, 2021 (population 97.47 million), Vietnam received a total of 18,237,060 doses of five different types of COVID-19 vaccines, including AstraZeneca, Moderna, Sputnik V, Pfizer/BioNtech, and Sinopharm. This would allow 1 vaccine for approximately 19% of the population.

STUDY VARIABLES

Outcome variables

COVID-19 Vaccine Hesitancy

COVID-19 vaccine hesitancy was assessed using the Oxford COVID-19 vaccine hesitancy scale, which consists of seven items validated in a previous study [12]. Each item had specific response options that were coded from 1 to 5, with a "don't know" option excluded from scoring. The sum scores ranged from 7 to 35, with higher scores indicating a higher level of vaccine hesitancy [12].

Main Predictor variable

Information sources obtained from social media

The following information was collected about social media use for accessing information on COVID-19 vaccines [3]: currently using social networks, sources of information about vaccines, channels used to look up information, channels used to discuss vaccines, frequency of encountering positive information, positive information encountered, frequency of encountering negative information, and negative information encountered.

COVID-19 vaccine information from social media

The following information was collected regarding the reliability of COVID-19 vaccine information from social media based on previous literature review [3]:

- Frequency of updating the news on COVID-19 vaccine from social networks: (3 times/day; 1-2 times/day; 4-6 times/weeks; 1-3 times/week, less than 1 time/weeks; no update).
- Level of trust in information from social networks.
- Selection of reliable information sources.
- Attitudes about social networks improving knowledge.
- Influence of social networks on vaccine hesitancy for themselves and those around them.
- Influence of social media on attitudes about COVID-19 vaccination.
- Frequency of receiving positive; negative information related to COVID-19 vaccine from social media on a scale from 1 to 5 with a corresponding decreasing level of frequency, including very often (>7 times/week), regularly (5-6 times/week), medium (3-4 times/week), infrequent 1-2 times/week) and hardly seen (<1 time/week).

Covariate variables

Demographic

The following demographic information was collected: age (in years), gender (male or female), ethnicity, place of residence (urban or rural), and education level (high school or below high school, middle school/high school, college/university), occupation, marital status (single, married, divorced/widowed), and household income (poor, near-poor, normal).

Health-related Variables

Information on chronic illnesses, health status in the past two weeks, and COVID-19 history was collected.

STATISTICAL ANALYSES

Stata version 16.0 was used to analyze data. Multivariate linear regression models were utilized to assess the association between social media use and vaccine hesitancy score [13]. A p-value below 0.05 was considered statistically significant.

ETHICS APPROVAL

The protocol of this study was approved by the Ethical Review Board of Hue University of Medicine and Pharmacy (No. H2021/443).

RESULTS

The participation rate was 96.7%, (679) out of 702 study participants who were between the ages of 18 and 60 (n = 702 people), 66% were female. Most of the subjects lived in urban areas (79.6%) and had no religion (81.9%). University education was prevalent, accounting for 69.2%. Civil servants/officers and pupils/students were the two main occupational groups, accounting for 43.9% and 31.6%, respectively. Only 10% of study subjects had at least one chronic disease or more (Table 1).

TABLE 1: CHARACTERISTICS OF THE RESPONDENTS

Characteristics		Number (n)	Percent (%)
Age group	< 20	38	5.4
	20-25	288	41.0
	26-30	169	24.1
	31-40	156	22.2
	>40	53	7.3
Gender	Female	463	66
	Male	239	34
Religious	None	574	81.8
	Buddhism	88	12.5
	Catholic	34	4.8
	Others	6	0.9
Residential areas	Urban	559	79.6
	Rural	143	20.4
Education level	Under primary school	2	0.3
	Secondary school	21	3
	High school	40	5.7
	College/University	486	69.2
	Postgraduate	153	21.8
Current occupation	Public servants	316	45
	Student	222	31.6
	Staff	50	7.1
	Business	36	5.1
	Worker	30	4.3
	Unemployment	21	3
	Other	7	1
	Farmer	2	0.3
	Housewife	9	1.3
	Retire	9	1.3
Married status	Single	478	68.1
	Married	212	30.2
	Widow	4	0.6
	Separation/divorce	8	1.1
Household economic status	Poor/near poor	24	3.4
	Average	678	96.6
History of chronic diseases	No	632	90
	Liver	20	2.8
	Cardiovascular	6	0.9
	Hypertension	16	2.3
	Chronic kidney disease	2	0.3
	COPD	1	0.1
	Diabetes	2	0.3
	Dyslipidemia	6	0.9
	Others	25	3.5

Three popular social networks in this study are Facebook (95.9%), Zalo (90.6%), and YouTube (78.8%). The most widely used social network for learning and exchanging information is Facebook (34.7%).

There were many sources of information on social networks, with the most popular being government websites (86%) and medical knowledge pages (51.7%). Over 80% of study participants regularly see positive information and encouragement for vaccination, including the benefits of vaccination in protecting against COVID (53%), reducing disease severity if infected (75.2%), vaccines being safe for health (28.3%), creating herd immunity (74.5%), and the policy of rational use of vaccines (37%). In addition, 34.2% of the subjects also frequently see negative information about the COVID vaccine, including information about side effects after injection (80.8%), anaphylaxis or death after injection (75.8%), worsening of existing diseases (10.5%), and vaccines not being effective in preventing disease (23.2%), inappropriate vaccine policies (29.9%), and abuse of relationships for the benefit of vaccines (2.3%) (Table 2).

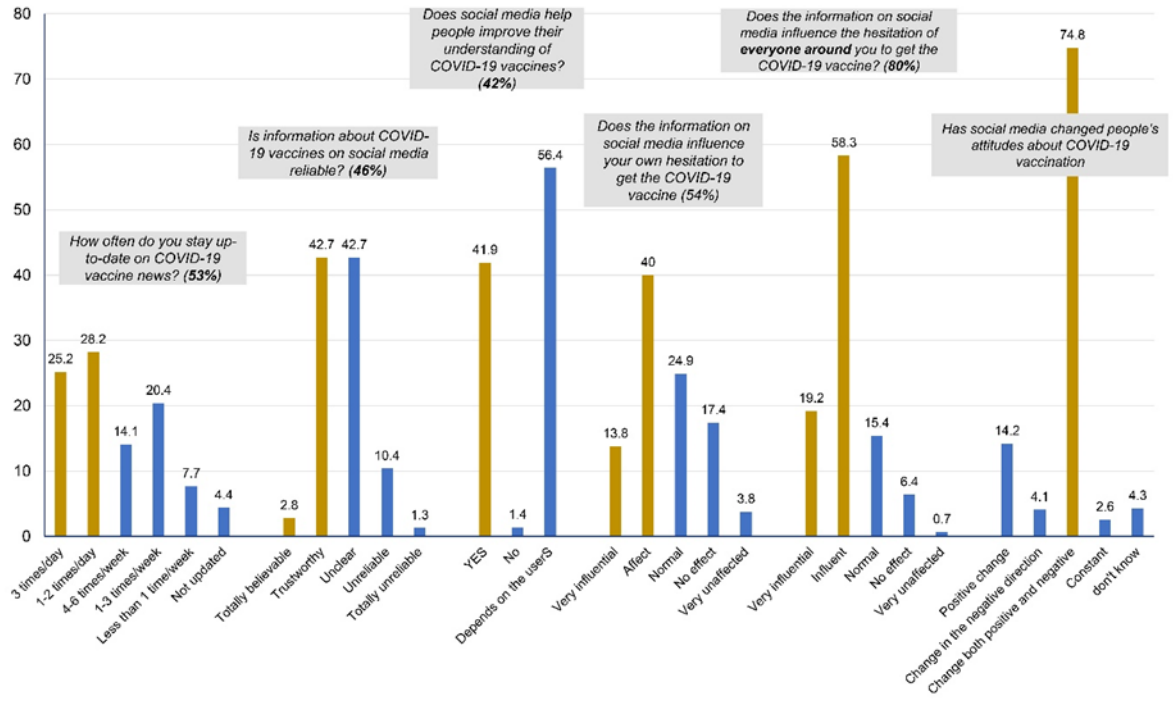
67.5% of subjects updated their information on vaccines daily. Trusted sources of vaccine information include government websites, health ministries, etc. (92.3%) and medical journals (56.3%), as well as medical websites (43.3%) and electronic newspapers (33.8%). 53.8% of subjects said that information about vaccines on social networks influenced their decision to vaccinate, and 77.5% said that people around them were also influenced by this information (Figure 1).

TABLE 2. SOCIAL MEDIA AND ITS DISTRIBUTION AND INFORMATION

Information	Number (n)	Percent %
Current use social media		
Government/State website	369	52.6
Facebook	673	95.9
Zalo	636	90.6
Instagram	376	53.6
Twitter	88	12.5
TikTok	241	34.3
YouTube	553	78.8
Linkedin	100	14.2
Pinterest	106	15.1
Newspaper	332	47.3
Others	6	0.9
Most popular social media to access to information on COVID-19 vaccine?		
Government/State website	208	29.6
Facebook	243	34.7
Zalo	65	9.3
Instagram	5	0.7
TikTok	3	0.4
YouTube	19	2.7
Newspaper	142	20.2
Most popular information sources on COVID-19 vaccine you are following		
Government information sites	604	86
Pages about medical knowledge	363	51.7
Facebook Pages with green ticks	158	22.5
Artists or celebrities	20	2.8
Share from the groups you join	175	24.9
Posts shared by friends and family	212	30.2
Other sources	15	2.1

Information	Number (n)	Percent %
When you have a question/question about the COVID-19 vaccine, what information channels do you usually look up through?		
Social network: Facebook, Zalo, …	225	32.1
Government state website	562	80.1
Newspaper	253	36
Google	29	4.1
Others	22	3.2
What platform that you discuss on COVID-19 vaccine		
Facebook, Zalo,..	365	52
Newspaper	67	9.5
How often do you see positive information and encouraging COVID-19 vaccination on social media?		
Very often (>7 times/week)	159	22.6
Regularly (5-6 times/week)	223	31.8
Medium (3-4 times/week)	182	25.9
Infrequent (1-2 times/week)	101	14.4
Hardly seen (<1 time/week)	25	3.6
What positive news about the COVID-19 vaccine have you seen/heard/read? (Multiple choice question)		
Protect your body from covid-19	372	53
Reduce the severity if you have an illness	528	75.2
Vaccines are not harmful to health	199	28.3
Create herd immunity	523	74.5
Policy on rational use and distribution of vaccines	260	37
How often do you see negative information and encouragement not to get the COVID-19 vaccine on social media sites?		
Very often (>7 times/week)	51	7.3
Regularly (5-6 times/week)	68	9.7
Medium (3-4 times/week)	121	17.2
Infrequent (1-2 times/week)	267	38
Hardly seen (<1 time/week)	183	26.1
What negative information about the COVID-19 vaccine have you seen/heard/read? (Multiple choice question)		
Side effects after vaccination: fever, nausea, headache, pain at the injection site, etc.	567	80.8
Anaphylaxis or death	532	75.8
Exacerbating other comorbidities	74	10.5
Vaccines had low effectiveness in preventing COVID-19	163	23.2
Unreasonable policy for vaccine uses and allocation	210	29.9
Inappropriate vaccine storage; Taking advantage of relationships to receive vaccine; Vaccine is a toxic drug; and Vaccine use if for profit purposes	16	2.3

FIGURE 1. PERCEPTIONS OF COVID-19 INFORMATION ON SOCIAL MEDIA



The mean score on the COVID-19 vaccine hesitancy scale was 9.5±2.7. Factors associated with vaccine hesitancy were gender and age, with men having higher levels of hesitancy than women, and the highest level of hesitancy being in the age group of 45 to 59 years old (33.21 ± 3.468) and the lowest level of hesitancy being in the age group 60 years and older (27.43 ± 11.356). Using the mean cut-off point, we found that 15.1% of people had vaccine hesitancy (Figure 2).

Results from the linear regression model showed that respondents who were students (B=0.58; 95%CI=0.02, 1.15; p=0.043) or unemployed (B=1.59; 95%CI=0.41, 2.76; p=0.008), receiving a positive information from social media (Facebook, Zalo) (B=-0.31; 95%CI=(-0.50, -0.12); p=0.001) and trust in social media information (B=-0.45; 95%CI=(-0.72, -0.19); p=0.001) were significantly associated with a reduced score of vaccine hesitancy(p < 0.01) (Table 3).

FIGURE 2. COVID-19 VACCINE HESITANCY SCORE BY CHARACTERISTICS

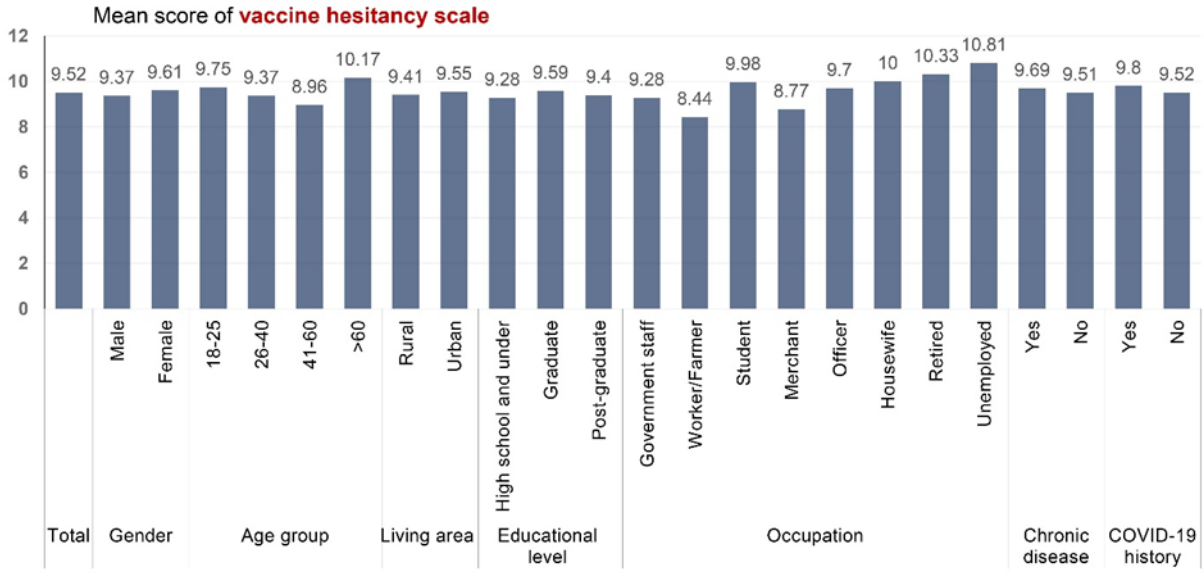


TABLE 3: BIVARIATE AND MULTIVARIATE LINEAR REGRESSION ANALYSIS FOR FACTORS ASSOCIATED WITH COVID-19 VACCINE HESITANCY

Variables		COVID-19 Vaccine Hesitancy			
		Bivariate		Multivariate	
		B (95%CI)	p	B (95%CI)	p
Age		-0.03 (-0.05, -0.004)	0.023	-0.01 (-0.05, 0.03)	0.681
Gender					
	Men	Reference		Reference	
	Women	0.24 (-0.18, 0.66)	0.256	0.19 (-0.25, 0.63)	0.391
Ethnicity					
	Kinh	Reference		Reference	
	Others	-0.99 (-2.58, 0.59)	0.218	-1.18 (-2.75, 0.39)	0.142
Religion					
	None	Reference		Reference	
	Catholicism	-0.42 (-1.29, 0.46)	0.349	-0.23 (-1.11, 0.66)	0.615
	Buddhism	0.32 (-0.28, 0.92)	0.299	0.33 (-0.27, 0.94)	0.279
Living area					
	Rural area	Reference		Reference	
	Urban area	0.14 (-0.36, 0.64)	0.584	0.22 (-0.30, 0.74)	0.399
Education level					
	High school/ less than HS	Reference		Reference	
	Bachelor's degree	0.21 (-0.22,0.65)	0.339	0.17 (-0.67, 1.01)	0.674
	Post-graduate	-0.16 (-0.64, 0.32)	0.509	0.37 (-0.59, 1.32)	0.451
Occupation					
	Government staff	Reference		Reference	
	Farmer/Worker	-1.14 (-2.08, -0.2)	0.018	-0.58 (-1.60, 0.43)	0.261
	Student	0.65 (0.22, 1.08)	0.003	0.58 (0.02, 1.15)	0.043
	Merchant	-0.8 (-1.66, 0.06)	0.068	-0.67 (-1.55, 0.21)	0.137
	Officer	0.19 (-0.62, 1.01)	0.641	0.17 (-0.67, 1.01)	0.698
	Retired/Housewife	0.63 (-0.48, 1.73)	0.265	0.95 (-0.24, 2.14)	0.116
	Unemployed	1.33 (0.17, 2.48)	0.024	1.59 (0.41, 2.76)	0.008
Marital status					
	Single	Reference		Reference	
	Married	-0.55 (-0.98, -0.12)	0.012	-0.20 (-0.78, 0.37)	0.491
	Widowed/Divorce	-0.36 (-1.88, 1.16)	0.639	-0.47 (-2.09, 1.14)	0.565
Economic status					
	Non-poor	Reference		Reference	
	Poor	0.28 (-0.81, 1.36)	0.615	0.36 (-0.80, 1.47)	0.561
Chronic disease					
	No	Reference		Reference	
	Yes	0.19 (-0.47, 0.84)	0.578	0.33 (-0.34, 0.10)	0.34
Diagnosed with COVID-19					
	No	Reference		Reference	
	Yes	0.28 (0.82, -2.06)	0.816	0.26 (-2.04, 2.56)	0.82
Frequency of receiving *positive* information regarding COVID-19 vaccine on social media		-0.35 (-0.53, -0.17)	<0.001	-0.31 (-0.50, -0.12)	0.001

Variables	COVID-19 Vaccine Hesitancy			
	Bivariate		Multivariate	
	B (95%CI)	p	B (95%CI)	p
Frequency of receiving *negative* information regarding COVID-19 vaccine on social media	0.02 (-0.15, 0.19)	0.847	-0.08 (-2.6, 0.09)	0.35
Trust in information regarding COVID-19 vaccine via social media	-0.49 (-0.75, -0.23)	<0.001	-0.45 (-0.72, -0.19)	0.001

DISCUSSION

A study conducted in Vietnam on 702 individuals aimed to determine vaccine hesitancy and its relationship with social media use through an online survey. The study was conducted in the context of vaccine shortages and low public trust in the COVID-19 vaccines. The survey found that a significant percentage of participants used popular social networks such as Facebook, Zalo, and YouTube to access information about the COVID-19. In fact, 34.7% of participants accessed information about the vaccine through Facebook, compared to 29.6% who accessed government information channels. The study found that one in six people hesitated to get vaccinated, indicating a notable proportion of vaccine hesitancy. In addition, the level of trust and frequency of using social networks in Vietnam were positively associated with a reduced hesitancy score.

Previous studies in Vietnam found that TV and electronic newspapers were the main sources of COVID-19 and vaccine information, but our study shows that social networks are now primarily due to the pandemic severity and lockdown measures [14,15]. Social media's speed in spreading information about the disease may be driving this change, as people increasingly rely on it for vaccine-related news.

In this study, the average COVID-19 vaccine hesitancy score (9.5±2.7) was lower than that reported in prior research utilizing the same scale, such as the study conducted by Tuyen VD et al. (2021) [16] which reported a score of 11.2±2.7, and the study by Daniel Freeman (13.6±7.3) [12] or study by in Malaysia (11.3±4.9) [17]. This disparity could potentially indicate that the Vietnamese populace exhibits a greater propensity for vaccine acceptance when compared to individuals residing in higher-income nations such as Taiwan or the UK or Malaysia.

Data from Vietnam during the same period suggests a link between COVID-19 vaccine hesitancy and social media. One study of health science students found that vaccine hesitancy was 40.4% and suggested that mass media appreciation of vaccine safety and effectiveness could help reduce hesitancy [18]]. Another study found that COVID-19 risk had a positive effect on both hesitancy and vaccination perception, while vaccination perception had a negative impact on hesitancy, illustrating the detrimental effect of social media on immunity [19].

A relationship was found between students and unemployed individuals and COVID-19 vaccine hesitancy. This result may be due to these two groups having the most access to social media and information about the COVID-19 vaccine compared to other occupational groups. Previous studies have shown that trust in information is an important determinant of vaccination [20]. Research by a Pakistani team also showed an inverse relationship between the rate of trust in the information received and the increased rate of vaccine hesitancy [21,22]. Their opinions on the safety of the COVID-19 vaccine were influenced by their reliance on social media as a primary source of information and their distrust of vaccine manufacturers (pharmaceutical companies) [23].

An interesting finding in this study was the relationship between the frequency of social media use and the degree of trust in the information obtained from these platforms that influenced people's psychological reluctance to vaccinate in Vietnam. These findings add to the literature on the role of social media in shaping attitudes towards vaccines [3].

Although some studies have considered social media to have a positive impact on COVID-19 vaccine hesitancy, disinformation disseminated through these platforms has led to negative beliefs about the vaccine. This problem has been exacerbated by the spread of false material designed to reduce vaccination uptake or increase vaccine reluctance [21]. This was demonstrated in a study in Vietnam regarding side effects in national immunization programs, which showed an increased likelihood of vaccine refusal after reading about adverse effects of immunizations (AEFIs) in the media [24]. A study conducted in the US suggests that while social media can be used to educate vaccine-hesitant individuals, traditional media should prioritize promoting reliable, fact-based vaccine content to their audiences [25]. These points are consistent with recent evidence in the UK on public health communication during the pandemic. The study recommended providing informative social media campaigns to share good resources and encourage browsing on reliable sources, and for social media companies to intensify their removal of vaccine disinformation and anti-vax accounts with independent monitoring [26].

It is noted that this study was conducted during a period of vaccine shortage, which may be associated with increased hesitancy. Vaccine shortages can lead to increased anxiety and distrust because people question the safety and effectiveness of existing vaccines. This highlights the importance of ensuring a stable and reliable supply of vaccines, as well as effective communication strategies to address any concerns or misconceptions about vaccines at this time [27-28].

Based on the findings of this study, policymakers and health authorities need to weigh the factors associated with public reluctance and promote wider use of vaccine access strategies in accordance with highly reliable scientific evidence and transparency. Targeted and emergency risk communication strategies, such as reaching out to influencers and high-level public figures to communicate the benefits of vaccination and promote it, are also effective strategies to reverse the rate of vaccine hesitancy in the community [29].

Although the first study was conducted in the context of a pandemic through an online platform and relied on self-reporting, it also has some limitations. Since it was conducted online using the snowball approach, the collected information may be misleading because individuals know each other, and it may not reflect those who did not participate. Therefore, it is important to bear in mind the possible bias in these responses. Second, a sample size of 702 people is small compared to the general population of Vietnam (79.47 million in 2021 and 100 million people in 2024), so the results may not be generalizable to all people and other countries. However, the evidence found in this study may be applicable to countries and regions with similar contexts. Third, it is difficult to conclude a causal relationship between the relationships explored in this study because it is only a cross-sectional survey.

Despite these limitations, the study has some strengths that must be emphasized. The study used a validated scale to assess vaccine hesitancy and investigated numerous pieces of information related to demographics, health, and possible social networks that contribute to vaccine hesitancy. The findings have important implications for public health efforts to increase vaccine uptake and combat COVID-19 vaccine misinformation and infodemics. For future studies, a larger sample size and time-series survey design should be taken into account resulting in a more accurate assessment of this relationship and facilitating more informed policymaking. In future investigations, it might be possible to examine the readiness of health-specific topics, media, and service providers, as well as the barrier to accessing vaccines due to vaccine hesitancy. While rural population and level of education were not found to be significant in this study, these factors may have different effects in other contexts. Therefore, it would be useful to include them in future research at some stage.

CONCLUSION

The main findings of the study show that a significant proportion of the Vietnamese population is hesitant to get the COVID-19 vaccine and that there is a link between social media use and vaccine hesitancy. The frequency of social media use and confidence in information obtained from these platforms are major factors influencing vaccine hesitancy. Interventions to increase the accuracy and reliability of COVID-19 vaccine information on social media platforms can help address hesitancy and promote vaccine adoption. More research is needed to better understand the dynamics of vaccine hesitancy and the effectiveness of interventions to reduce it.

DECLARATIONS:

Consent for publication: Not applicable.

COMPETING INTEREST:

The authors declare they have no competing interests.

AVAILABILITY OF DATA AND MATERIALS

All data supporting our findings will be shared upon request.

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ANALYSIS OF MANAGEMENT PRACTICE

MANAGING PATIENT FLOW ACROSS AN ACUTE TERTIARY CARE HOSPITAL THROUGH A CENTRALISED COORDINATION HUB: TECHNOLOGICAL AND CULTURAL CHANGE – A CASE STUDY

Rachael Smithson, Tracey Doherty, Andrew Fisher

Gold Coast Health, Queensland, Australia

Correspondence: rachael.smithson@health.qld.gov.au

ABSTRACT

AIM:

A centralised Coordination Hub was implemented at a large tertiary health service in Queensland, Australia to address problems associated with a fragmented, reactive and manual approach to patient flow.

APPROACH:

The Hub was developed through challenging traditional ways of working, breaking down divisional silos, and developing technological enablers to manage patient flow as a whole-system issue. The Hub is a centralised space within the health service, where staff involved in patient flow are co-located and provided with real-time visibility of end-to-end data.

CONTEXT:

This case study describes the implementation and early operation of the Hub, outlining the critical design features and some of the early challenges and how they are being addressed.

MAIN FINDINGS:

This approach was designed to manage patient flow as a whole-system issue – co-locating staff, providing them with visibility of real time data, and accountability for decision-making to address flow blockages.

CONCLUSIONS:

Greater visibility of data and co-location of staff is not sufficient to manage long-standing patient flow challenges. This must be accompanied by appropriate accountability and authority to ensure that those who see and understand emergent flow issues are equipped with the authority to act and respond.

KEYWORDS

Patient flow; hospital management; accountability; bed capacity

INTRODUCTION & BACKGROUND

Hospital delivery systems are under increasing pressure to improve both the quality and efficiency of patient care [1]. Efforts to improve hospital efficiency often focus on speeding up flow through parts of the system where patients wait – waiting to be seen in an emergency department (ED); waiting for an outpatient appointment; waiting for treatment; and – once in hospital – waiting to

be discharged. Hospitals and health systems are frequently held to account for achieving target thresholds against these markers, with safe and rapid entry into and out of hospital receiving the most attention. However, these different parts of the system frequently operate in isolation – potentially leading to a 'blame culture' whereby blockages are seen as a problem elsewhere in the system, over which the isolated areas consider themselves to have little influence [2,3]. Here we describe the development and impact of a centralised and systemic approach to managing patient flow across a large health service in Australia, considering the interplay between the technological and cultural dimensions of change. We conclude with some lessons for hospital and health service providers considering innovative ways of managing patient flow.

DEFINING THE PROBLEM: FRAGMENTED PATIENT FLOW MANAGEMENT

In Australia and other countries [4,3], hospitals are held to account for the percentage of patients presenting to the emergency department (ED) who are treated (and then admitted or discharged) within four hours. In Australia, this is represented through the National Emergency Access Target – or NEAT. Meeting this percentage target is often considered to be the 'barometer' of how well a hospital is functioning [5]. At the other end of the acute hospital journey, there is increasing scrutiny of internal or external delays to discharging patients who may be otherwise clinically ready and safe to leave hospital [6,7].

All these issues relate to patient flow. How patients flow through a hospital not only focuses on movement through the physical space, but also on all the staff involved in ensuring that the flow runs smoothly. In many instances, blockages entering or exiting a hospital are not an issue to be solved by increasing the number of existing resources – it is a challenge with managing and coordinating processes related to throughput or flow across the system. However, there is very little research or commentary on 'end-to-end' patient flow management, with most of the literature focused specifically on patient flow in and out of the ED [3] or delayed discharge and transfers of care from inpatient facilities [7]. This case study details some early findings from the Gold Coast Hospital and Health Service (GCH), where a centralised approach to patient flow was developed through challenging traditional ways of working and developing technological enablers. We will firstly describe the objectives and development of the intervention, and then consider its early impact on patient flow.

THE COORDINATION HUB AT GOLD COAST HEALTH

In 2016, a project team led an internal review which concluded that there could be improvements in bed management and patient flow processes, which were reactive and reliant on manual processes. The review suggested examining patient flow as a whole system issue, not just a problem affecting, or caused by, the ED. A considerable amount of staff time was spent in duplicative, decentralised and ineffectual patient flow meetings, and there was opportunity to improve efficiency and support improvements in communication between all staff involved in patient flow management. The intention was to reform patient flow management with the following design features:

- Centralise bed allocation and patient flow functions
- Increase transparency and visibility
- Proactive processes and predictive analytics
- Coordinated patient care
- Automated real-time data flow and improved decision making.

The outcome of that review was the establishment of a Coordination Hub, based on similar models at Johns Hopkins Medical Centre (Maryland, US) and Humber River Hospital (Toronto, Canada) [8,9]. The Hub was to be a centralised unit where staff directly involved in patient flow are physically co-located in order to monitor and manage the flow of patients throughout the entire hospital journey. These staff included representatives from the ambulance service, nurse navigators, mental health practitioners, bed managers, environmental services, staffing allocations, incident controllers and information technology (IT) support staff. All of these staff had visibility of 24 different dashboards relating to activity across ambulance services, ED, inpatient units, discharges and transfers, management of complex patients and community-based inpatient services. The original intention was to centralise and therefore streamline: visibility of ED capacity and bed allocation and availability; predictive modelling and forecasting demand to improve patient flow in real time; and streamline communication across all staff involved in these processes.

DISCUSSION AND OUTCOMES: IMPLICATIONS FOR MANAGEMENT PRACTICE

At the time of this case study development, the Coordination Hub has been in operation for five years. The technology and visible dashboards have remained relatively consistent throughout this time, but there have been some changes to team dynamics and individual ways of working. Throughout this process, staff in the Hub have taken on greater oversight and responsibility for the patient flow information that is in front of them.

COMMUNICATION AND WAYS OF WORKING

In the early days of the Hub, the greatest change was in bringing all those involved in patient flow into the same room. Staff retained their existing management reporting lines but began to communicate with a common purpose to ease patient flow through the hospital system. Prior to this, staff were not aware where other colleagues were located within the hospital and had to chase others through numerous telephone calls, which created delays in transitioning patients through the system and created frustrations for those involved. This contributed to a lack of understanding of the pressures faced in individual parts of the system, and perpetuation of a blame culture.

Co-location of functions with a common purpose allowed more effective interpersonal relationships to form, through working together to understand issues and prioritise tasks. For instance, bed managers worked with environmental services staff to prioritise the order of cleaning beds depending on the order of patients being admitted from the ED. Ambulance service staff briefed bed managers on the likelihood that an incoming patient would be admitted, and what specialty support they might require.

The next phase of implementation involved making greater use of the end-to-end data to automate some of the processes that co-location enabled. For example, staff developed a flag in the electronic system to alert environmental services which beds need to be cleaned first, rather than having repeated routine conversations in the Hub every time.

During this period, forging these interpersonal relationships was considered more important by those in the Hub than the technology or visibility of end-to-end data. In these early days, staff were actually uncertain what to do with the information on the screens in front of them. The existing layers of decision-making to act on identified blockages or create capacity in the system, meant that Hub staff still could not respond in a timely way to the problems they were seeing. As a result, while the physical environment changed and interpersonal relationships developed, the individual roles and decision-making processes did not initially change fundamentally.

AUTONOMY AND ACCOUNTABILITY FOR DECISION-MAKING

In order to make best use of the data and technology, staff in the Hub needed to be empowered and clear on how to act on what they were seeing. This involved removing some of the decision-making layers and giving staff in the Hub greater autonomy to pre-empt and proactively manage patient flow, rather than reporting on blockages or crises that had already occurred. This was a challenge for divisional executives, who were required to relinquish some of their traditional day-to-day control over bed management and the associated budgetary implications for their particular areas and wards. In order to feel comfortable relinquishing this control, they needed to trust both the staff within the Hub and the data they were using for their decision-making.

This part of the process has taken considerable time and close working relationships between divisional executives and patient flow staff within the Hub. Visibility of the comprehensive end-to-end data allows everyone to have a common understanding of the pressure points and opportunities to ease flow or create capacity and supports the Hub staff to be accountable for the decisions they make. These ongoing relationships have allowed staff across the system to see patient flow management and bed occupancy as a whole system issue, and to make safe, sensible and proactive decisions.

CONCLUSIONS AND LESSONS LEARNED

Some of the fundamental lessons for others considering the development of a technology-driven Coordination Hub for managing patient flow, are:

- Appreciate the impact of a new physical environment and the time it will take to embed new processes and practices
- Leave some process redesign until after the physical move into the Hub, allowing for action in response to any identified glitches.
- Continuously engage and involve staff in the design and implementation of the intervention

- Ambulance service engagement is critical to tackling the entry points into the patient flow journey
- The technology and co-location of staff is a tool through which to collectively explore different models of care – it is not the entire solution in itself
- Embed rigorous evaluation throughout the journey to capture lessons and progress, and ensure any problems are identified and managed early

The Coordination Hub is continuously building on the progress already made, by customising the data to more appropriately target information to those responsible for particular parts of the patient journey. Patient flow management is a whole system issue, and the responsibility of all staff – not just those working directly in the Hub. For instance, some of the information is now available in inpatient areas so that ward staff can see the part they are playing in patient flow management and contextualise some of the decisions they are making and pressures they are facing from other parts of the system. Mental health practitioners have taken on an enhanced role in the Hub, working to avoid ED attendances for people in crisis. And ambulance staff and patient flow managers in the Hub support patients to find alternative care pathways.

The development of the Coordination Hub and its current ways of working continues to be an iterative process, tweaked over time in response to identified challenges; improvements in data quality; widening scope of responsibility; and greater transparency and accountability for escalation and decision-making. It has been successful in tackling the challenges that it was designed to address – siloed, reactive approaches to patient flow that focused on ED as the problem. Bed management and patient flow is now proactively seen as a whole of system issue. The technology itself is not a 'magic wand', but visibility of the end-to-end data supported staff in taking on greater accountability for escalation and decision-making throughout the whole system of hospital-based care.

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ANALYSIS OF MANAGEMENT PRACTICE

FIREFIGHTING WATER TANKER COMMUTING ACCIDENT: CASE REPORT ON WHY IT HAPPENED AND HOW TO MANAGE

Rosnah Ismail[1], Norfaqihah Mohtar[1], Nor Hisham Mohammad[2], Jamri Masran[2], Mohammad Paisal Adam[2], Rizal Abdul Manaf[1]*

1. Department of Public Health Medicine, Faculty of Medicine, Universiti Kebangsaan Malaysia, Jalan Yaacob Latif, Bandar Tun Razak, 56000, Cheras, Kuala Lumpur, Malaysia.
2. Fire and Rescue Department of Malaysia, Lebuh Wawasan, Presint 7, 62250 Putrajaya

Correspondence: faqihahmohtar@gmail.com

ABSTRACT

Road traffic accidents represent a significant global public health concern, and Malaysia is no exception. Within the Fire and Rescue Department of Malaysia (FRDM), similar issues have had detrimental impacts on health, financial loss, and service disruptions from 2016 to 2021.

These challenges were highlighted by a recent accident involving a water tanker during a road test, described in this study according to qualitative data from the FRDM accident investigation report. The investigation revealed that human factor, as the active failure, was the primary cause of the accident. Response errors stem from a cascade of latent conditions initiated by inadequate resource management (i.e. provision of training and budget allocation).

To address these challenges, the FRDM should adopt a comprehensive approach to address both latent conditions and active failures. This comprehensive approach ensures that both immediate concerns and root causes are addressed, leading to sustained improvements in safety and operational performance.

KEYWORDS

Commuting accidents; road traffic accidents; firefighter; safety management

INTRODUCTION

Road traffic accidents (RTAs) represent a significant global public health issue, with approximately 1.3 million deaths occurring annually as a result. [1] This issue has also been a concern in Malaysia, where the trend escalated in 2019, resulting in over half a million fatalities in RTAs. [2] The firefighter population globally [3], including in Malaysia, faces these issues. The Fire and Rescue Department of Malaysia (FRDM) experienced an average of 50 accident cases per year. [4] Commuting accidents (CAs) among firefighters have significant and diverse implications for health, finances, and service continuity. Between 2016 and 2021, commuting accidents accounted for 12% of injuries and 1.2% of fatalities among firefighter drivers. Furthermore, the FRDM incurred losses of approximately RM4.5 million due to fines, civil compensatory damages, and expenses related to fire vehicle maintenance. The operational capability of the fire department was compromised due to vehicle damage and the potential for driver injury, death,

or suspension, particularly in incidents involving water tanker accidents. [4] This case report will focus on a water tanker accident to elucidate the dynamic interaction between the driver, the water tanker, and the surrounding environment.

CASE REPORT

In January 2022, a 42-year-old male firefighter driver, with seven years of experience at a fire station in Peninsular Malaysia, was involved in a commuting accident while driving a water tanker during a road test on a state road. As the driver approached a traffic light intersection while descending a hill, the driver gradually reduced the vehicle's speed. However, both the driver and his co-driver were uncertain about the vehicle's speed. As the driver attempted to make a right turn, the water truck unexpectedly lost control, resulting in a rollover and flipping upside down. Fortunately, no other vehicles were involved at the time of the incident. After the collision, the driver lost consciousness for about 20 minutes and regained consciousness while being attended to by the FRDM's Emergency Medical Response Services personnel in their vehicle. He sustained minor bodily injuries, as determined during a medical assessment, and was discharged from the hospital's emergency room on the same day. [5]

A subsequent accident investigation concluded that the primary cause of the collision was a driver-related factor. The driver had not completed specific training for operating the articulated vehicle. Examination at the accident site revealed tyre markings indicating that the driver had consistently applied excessive force to the brake pedal. This suggested that the driver may have been travelling at an inappropriate speed downhill. This presumption was supported by the driver's testimony, indicating his limited knowledge of various braking mechanisms. Instead of engaging the series braking mechanism as recommended, the driver only pressed the brake pedal before turning at a traffic light intersection downhill. Standard practice would involve activating the speed retarder control, shifting gears to a lower level, and gently applying both the pedal brake and trailer brake, as well as the exhaust brake as necessary. [6] The harsh steering manoeuvre when turning further exacerbated the issue, causing the water tanker to become unstable and overturn. As a result of the commuting accident (CA), the driver was suspended from driving duties and received an allowance. Disciplinary action was subsequently taken against the driver for his irresponsible driving behaviour, which resulted in a commuting accident unrelated to emergency response. Additionally, a warning letter was issued to both the fire station head and the officer in charge for failing to provide familiarization training to the driver before permitting them to operate the water tanker. [5]

DISCUSSION

APPROACH TO ANALYSING THE WATER TANKER COMMUTING ACCIDENT.

We believe that this accident occurred due to the interaction between three main factors: the driver, the environment, and the water tanker, rather than solely due to a driver-related factor. The steep gradient downhill of the road topography was environmental factor that influenced the driver's decision to take a series of hasty actions. Moreover, the stability of the water tanker could have been significantly influenced by the water level inside, particularly as substantial sloshing occurred when the vehicle abruptly slowed downhill and traversed road damage at the intersection. Therefore, this case report serves as a pertinent illustration of how the dynamic interaction between humans, the environment, and vehicles can lead to water tanker commuting accidents.

The driver stumbled in determining the appropriate utilization of the braking system while manoeuvring the water tanker on the downhill road. These errors were caused by a previous decision to overlook driver competency. This case replicated the construct set out in the Swiss Cheese Model of Accident Causation (Figure 1). [7] The model demonstrates that the accident resulted from a combination of latent conditions and active failures at various levels of the organization, which coincided temporarily. Unlike active failures, which occur in real-time, latent conditions are often present long before an incident and can remain dormant until they interact with other factors to cause harm. Effective resource management, encompassing competency training provision and budget allocation, directly impacts the capacity to offer pertinent technical knowledge for operating the water tanker. Consequently, substandard practices and response errors may occur among individual drivers during safety-related incidents (Figure 2). Such events pose a considerable risk to the safety and well-being of both the driver and other road users.

FIGURE 1: SWISS CHEESE MODEL OF ACCIDENT CAUSATION

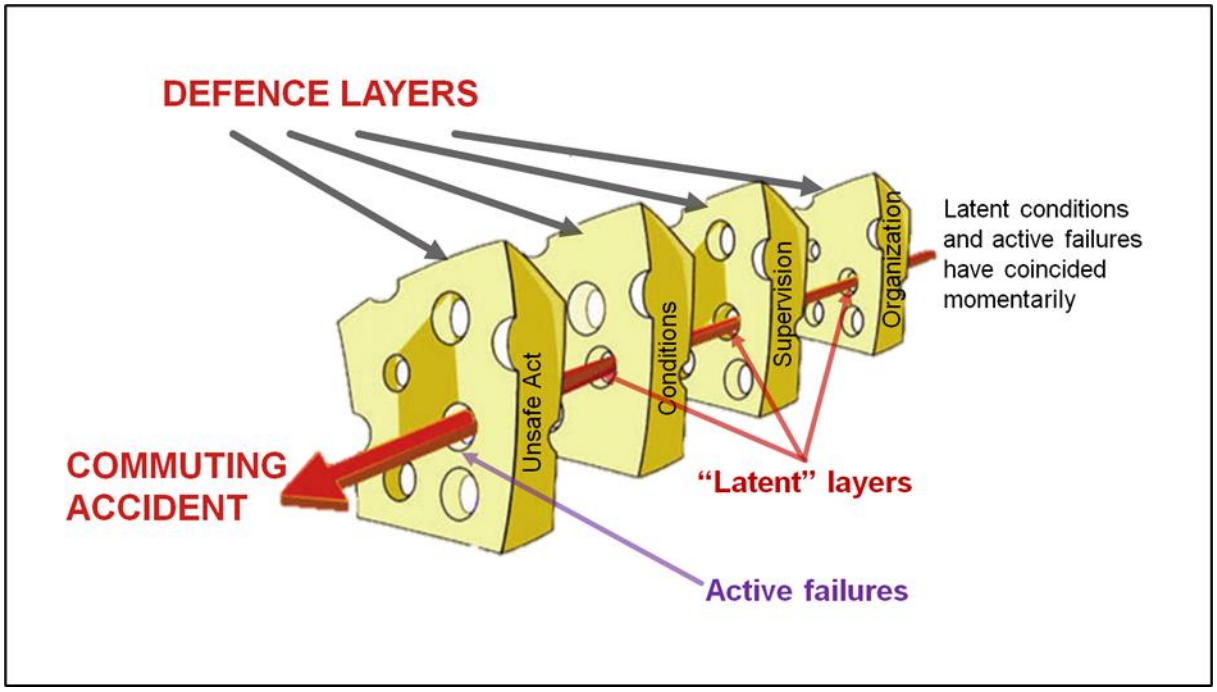
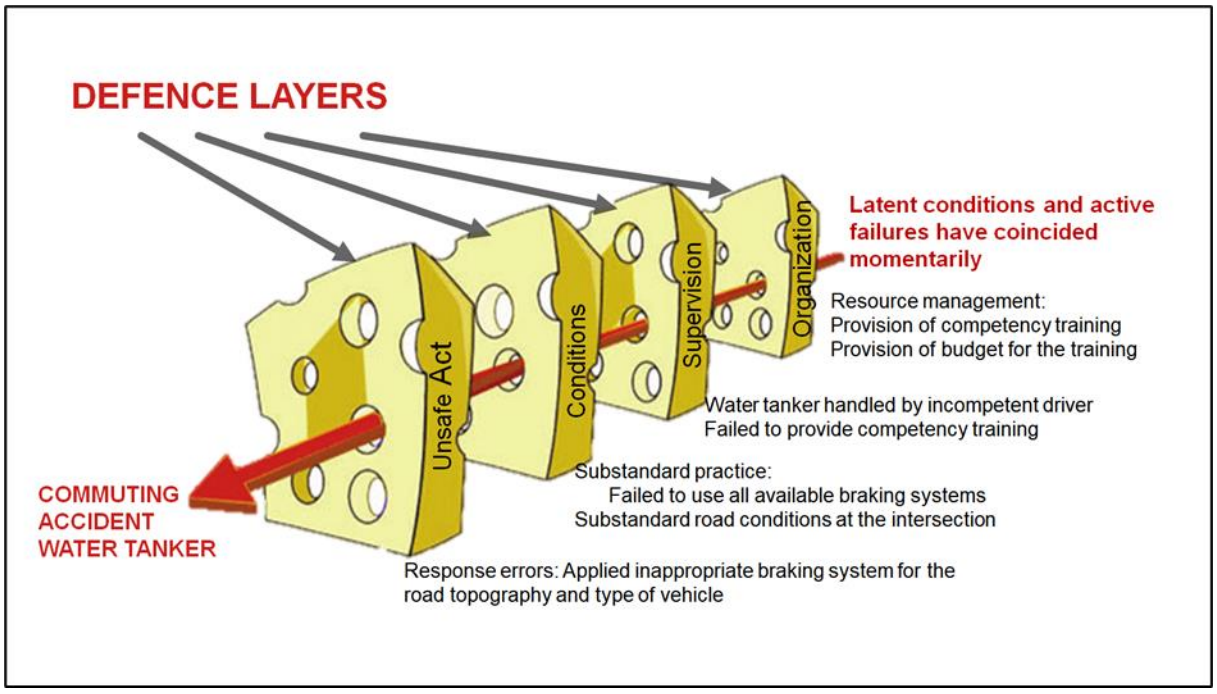


FIGURE 2: LATENT CONDITIONS AND ACTIVE FAILURES LEADING TO COMMUTING ACCIDENT



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MANAGEMENT APPROACHES TO ADDRESS THE COMMUTING ACCIDENT.

Addressing this commuting accident necessitates collaborative efforts from multiple organizational levels to establish sustainable prevention and management measures. These initiatives are essential not only for safeguarding the department's reputation and the safety and health of individual drivers but also for the well-being of public road users, as mandated by the Occupational Safety and Health (Amendment) Act of 2022. [8] Thus, a comprehensive range of effective management strategies is essential to address this issue from safety and health perspectives. Interaction among driver, environment and vehicle significantly plays a significant role in determining the frequency of accidents and therefore requires thorough evaluation. [9,10]

Latent conditions management

Latent conditions management involves identifying and addressing underlying factors within an organization's systems that contribute to the potential for errors or failures. Effective management of latent conditions involves proactive measures such as fostering good resource management to prevent or mitigate their impact on operations. In this case study, resource management stands out as the most critical latent condition to address and improve. Upper-level management bears the responsibility of ensuring sufficient allocation of resources, encompassing financial funding, trainers, and facilities, to facilitate the implementation of articulated vehicle training for all designated drivers.

The accident investigation report uncovered that the driver had not previously attended a specialized driving course, specifically the Articulated Special Vehicle Driving Technique Course for prime movers and tankers. Although the driver had completed the mandatory Emergency Response Driving Training (ERDT), the focus of that course did not primarily encompass driving articulated vehicles. Despite having operated the water tanker for more than five years, the driver had not been directed to participate in the specialized driving course. [5] Given this issue, he had no complete knowledge of the water tanker system, hence increasing the probability of committing an error in manoeuvring the vehicle during the near-crash situation. Therefore, attending specialised driving training for that assigned vehicle is beneficial for drivers to acquire driving ability as well as familiarity with the system and method to operate. [11] It is crucial for the driver to be familiar with the onboard technology of the assigned vehicle, as the technology in a water tanker differs from that in a Fire Rescue Tender. This is because the sense of familiarity directly impacts the speed and accuracy of responses when operating a vehicle in an emergency or near-crash scenario. It helps direct the driver's attention towards locating hand- and foot-operated controls where they expect them to be, thereby reducing the likelihood of being involved in a vehicle accident. [12] A few studies have found similar situations. [13–15] The hand and foot-operated controls differ according to type of vehicle. Firefighting water tanker has a complex braking system, comprising a retarder, exhaust brake, gear shifting, trailer brake, pedal brake, and hand brake. Hence, it is imperative to periodically enhance the driver's familiarity with the assigned vehicle by the best practices established by the organization. Naturally, this entails a significant budget allocation.

Given financial and resource limitations, mentoring emerges as a cost-effective training approach to instil safety-critical knowledge and skills within a shorter time frame. This method reduces the necessity for drivers to allocate extensive time away from work for lengthy courses. Furthermore, mentoring can efficiently support drivers in achieving peak performance while ensuring the continuity of their training. [16] However, the practicality of this training hinges on its inclusion in a policy or standing order mandating that all drivers receive adequate training, with proper documentation. The aforementioned advantages of specialized driving training diminish the probability of driving errors and, consequently, involvement in commuting accidents. The repercussions of such accidents extend beyond the health of the implicated driver, often resulting in sustained injuries. Additionally, they subject drivers to the risk of severe penalties, particularly if the accident leads to permanent injury or death of civilian drivers.

Active Failures Management

Management of active failures involves identifying, addressing, and mitigating errors or failures occurring in real-time while driving water tanker. This management approach focuses on promptly recognizing and resolving issues to prevent them from escalating into more significant problems or accidents. While enhancing resource management is crucial for mitigating subsequent inherent latent conditions at the supervisory and operational levels, individual drivers are also expected to proactively acquire knowledge and adhere to safe work practices autonomously when handling water tankers. The design of a firefighting water tanker poses a risk of significant accidents due to the kinetic force generated by the water sloshing front/back, especially during slowing down, corners or turns. The considerable volume of water, totalling 20,000 Liters, significantly amplifies the greater risk of rolling over, as they have a higher centre of gravity, due to the liquid sloshing while driving downhill. Indeed, while interior baffles significantly reduce the slosh factor, it is imperative to conduct thorough assessments of the condition of water tankers before, during, and after driving to ensure safety and prevent accidents. This process involves implementing a comprehensive checklist to assess various aspects of the tanker, including but not limited to:

- Inspection of the braking system and tanker
- Check for leaks or damages to the tanker body
- Verification of tyre pressure and tread depth
- Assessment of water levels

- Examination of lighting and signalling systems
- Examination of steering and suspension components
- Assessment of windshield visibility and wiper functionality
- Confirmation of proper functioning of safety features
- Inspection of reflective markings for visibility
- Evaluation of overall vehicle condition and cleanliness.

By adhering to a detailed checklist and conducting regular assessments, the objective of ensuring the safety and reliability of water tankers can be effectively achieved. During driving, it's crucial to continually assess additional surrounding road conditions such as road damage, traffic flow (i.e. observing the movement and behaviour of other vehicles to anticipate potential hazards or changes in traffic patterns), signage (i.e. road signs and markings), visibility, and land topography (observing changes in terrain, elevation, curves, and slopes that may impact vehicle handling and control). Road damage or design flaw, and visibility are officially listed as the causes of road crashes in Malaysia. [17] The presence of roads with potholes, cracks, uneven surfaces, or debris hazards have been frequently observed and reported in the media as factors leading to the loss of vehicle control and subsequent accidents.

Provision of psychological support for return to work

Commuting accidents not only caused physical injuries but it also resulted in mental and emotional disruption that can negatively impact daily or working life. [18] Therefore, in addition to physical examination follow-up, his post-commuting accident continuation care should encompass psychological screening and support. It is essential to screen for mental health status as part of acute management because of the probability of the risk of developing post-traumatic stress disorder (PTSD), particularly following this high-impact accident. [18]. Incorporating a minimum of one-year driving suspension for the driver may prove advantageous, as it allows emotional recuperation and improved overall functioning after the traumatic incident. This is because symptoms of PTSD may appear immediately after an accident, or they may take up to a year to manifest. [19] Although driving suspension may initially appear as a harsh penalty for the affected driver, it can serve as a form of psychological recovery. It has the potential to reduce the duration of PTSD and defer psychological traumatization disorder. Clear communication regarding these potential benefits should be effectively conveyed to the driver to encourage acceptance of the penalty and positively influence their return to work. [20]

CONCLUSION

In conclusion, while accidents involving water tankers may be infrequent, their occurrence can have significant adverse effects not only within the fire department but also on the environment and public safety. This case report, although limited in scope, underscores the importance of future analytical research to identify factors contributing to accidents and enhance risk management strategies. Effectively managing and preventing commuting accidents among firefighter drivers requires a comprehensive approach that integrates safety and health perspectives while considering the dynamic interaction between humans (drivers), vehicles, and the environment. Robust policies, along with the commitment and collaboration of all organizational levels, are essential for achieving sustainable improvements in occupational safety and health management within the fire department. (Words:2215)

ETHICAL CONSIDERATIONS

The study on commuting accidents in firefighters conducted at Fire and Rescue Department of Malaysia was approved by the Research and Ethics Committee of the Faculty of Medicine, Universiti Kebangsaan Malaysia (UKM PPI/111/8/JEP-2022-424). Permission to report a case of a water tanker commuting accident was obtained from the Fire and Rescue Department of Malaysia, with reference number JBPM/IP/OPS: 600-7 (24).

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COMPETING INTERESTS

The Authors declare that there is no conflict of interest.

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REVIEW ARTICLE

FACTORS ASSOCIATED WITH WORK MOTIVATION FOR HOSPITAL NURSES: A SCOPING REVIEW

Muhammad Fahresi Kamirullah[*1], *Atjo Wahyu*[2], *Stang*[2], *Muhammad Furqaan Naiem*[2], *Rafael Djajakusli*[2], *Amran Razak*[2], *Andi Agus Mumang*[3]

1. Master of Public Health Student, Department of Occupational Health and Safety, Faculty of Public Health, Hasanuddin University, Indonesia
2. Department of Occupational Health and Safety, Faculty of Public Health, Hasanuddin University, Indonesia
3. Graduate School of Hasanuddin University, Indonesia

Correspondence: muhammadfahresikamirullah64@gmail.com

ABSTRACT

INTRODUCTION:

The performance and quality levels of care by the nursing service system depends on the motivation levels of nurses. The aim of this research is to map the factors related to the work motivation of nurses in hospitals.

METHODS:

The literature search was conducted using PubMed, Science Direct, ProQuest, Garuda Portal, and the National Library. Articles included in the search were primary cross-sectional, case-control, cohort, randomized control trials (RCT), and non-RCT studies.

RESULTS:

This review identified 12 studies that were eligible for inclusion. Five studies were conducted in Indonesia. All articles were cross-sectional. Based on the results of the research, it was indicated that there are intrinsic and extrinsic factors involved in motivation for nurses. Intrinsic factors identified were associated with potential development needs, reward, nature of work, intrinsic effort, experience, commitment, intrinsic motivation, interest in community nursing, interest in basic nursing, interest in gerontological nursing, careful nursing, age, recent education, achievement, recognition, responsibility, shared values. Extrinsic factors related to working environment conditions, living conditions, salary, supervision, benefits, coworkers, communication, extrinsic effort, having children, marital status.

CONCLUSION:

Factors associated with the work motivation of nurses in hospitals can be grouped as intrinsic and extrinsic factors.

KEYWORDS

Motivation; Intrinsic factors; Extrinsic factors; Performance

INTRODUCTION

According to the Law of the Republic of Indonesia 2009, a hospital is a health service organization that provides comprehensive individual medical services including inpatient, outpatient, and emergency services. As a health service institution, the hospital is responsible for patient health and services. Good performance of hospital human resources are key indicators in service [1].

The performance and quality of a nursing service system depends on the motivation of the nurses. Motivation is the stimulus or reason for an individual's enthusiasm to do something to achieve a certain goal. Motivation includes responsibility, achievement, recognition, work, progress, development, and so on. Motivation can be divided into two parts, namely intrinsic and extrinsic motivation. Nurses who have good motivation will be encouraged to do something to achieve goals. The challenges faced by nurses are job demands that require better performance to ensure good quality of service. They also have different needs and goals. Therefore, motivation becomes important for them from both internal and external sources [2-5].

The standard of providing good service by nurses require skills and knowledge. However, the presence of motivation is fundamental. According to Herzberg's theory, the performance of nurses can be influenced by internal motivation such as desire to succeed, receipt of rewards, potential for individual development, work and responsibility. Meanwhile the external motivation originates from hospital regulations and management, supervision, safety and security, and working conditions. Therefore, motivation cannot be separated as part of an organization and service to move and guide employees (i.e., nurses) in determining and achieving the goals [3, 4, 6, 7].

The World Health Organization shows that Indonesia is among the five countries with the lowest motivation of health workers, together with Vietnam, Argentina, Nigeria, and India due to the welfare fulfillment aspect. Several factors that contribute to this problem including low salary, inappropriate service structure and remuneration, lack of supervision and strict sanctions of hospital administration, lack of hospital intention, high work demands, lack of bonus and promotion even additional salaries. These problems need attention so as to avoid motivation problems for nurse [8].

In this context it was identified that a systematic analysis was required about some published articles to identify the potential factors that can affect the work motivation of nurses in hospitals. This included scoping issues to ascertain which of them belong to internal or external factors. The present study can provide scientific information about potential factors and their classification related to work motivation in hospital nurses.

METHODOLOGY

This research used a synthesis study method with a scoping review. The development of the scoping review utilizes the Joanna Briggs Institute (JBI) framework [9], and the checklist items for reporting scoping reviews are from the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews (PRISMA-ScR) [10].

Research strategy: A comprehensive research strategy was conducted to identify published and unpublished studies. The following databases were searched: PubMed, ProQuest, Science Direct, Garuda Portal, and National Library. A three-step search approach was used to identify relevant studies. Step 1 - Identification. This stage began with entering search terms in each database and checking the filters according to the inclusion criteria. For Step 2 - Screening. Article screening was performed on each database by considering the inclusion and exclusion criteria. In Step 3, the reference lists of all included papers were searched for additional studies. Articles were written in English and Indonesian and published in the last 5 years (from 2018 to 2022).

Study/Source of evidence selection: All identified citations were uploaded to Elsevier's Mendeley management software. The inclusion criteria provided a guide to clearly understand the researcher's proposed idea that referred to the Population/Problem, Concept and Context (PCC) elements therefore the literature search could be conducted effectively [11]. Full-text studies that did not meet the inclusion criteria were excluded.

Data extraction: Data were extracted from eligible articles using a data extraction instrument including 1) characteristics of the included studies including author, year, title, purpose, setting, design and sample; 2) relevant data to the research objectives including author, year,

motivation instrument, dimensions, factors related to motivation and relevant outcomes.

Data analysis and presentation: The extracted data were presented descriptively to identify and summarize research evidence on the topic, including the identification of research gaps. To answer the research questions, various factors may be related to nurses' work motivation. The results of the review presented as a data map in tabular form and in a descriptive format aligned with the research objectives.

RESULTS

Table 1 and Figure 1 shows that 253,952 articles were identified from 5 databases and only 3,119 met the inclusion criteria for screening. 44 articles were further examined in full text. 32 articles were excluded for several reasons. Finally, it was included only 12 articles to be reviewed further.

Eleven of the 12 studies were from Asian countries that there are five articles were conducted in Indonesia. All articles used cross-sectional design. One study used probability sampling, two studies used cluster design, and nine studies used descriptive method which three of them were descriptive correlation. In seven studies, the main objective was to determine the factors that influence motivation. Population sizes ranged from 32 to 1,341 nurses (Table 1)

FIGURE 1. PRISMA FLOW CHART

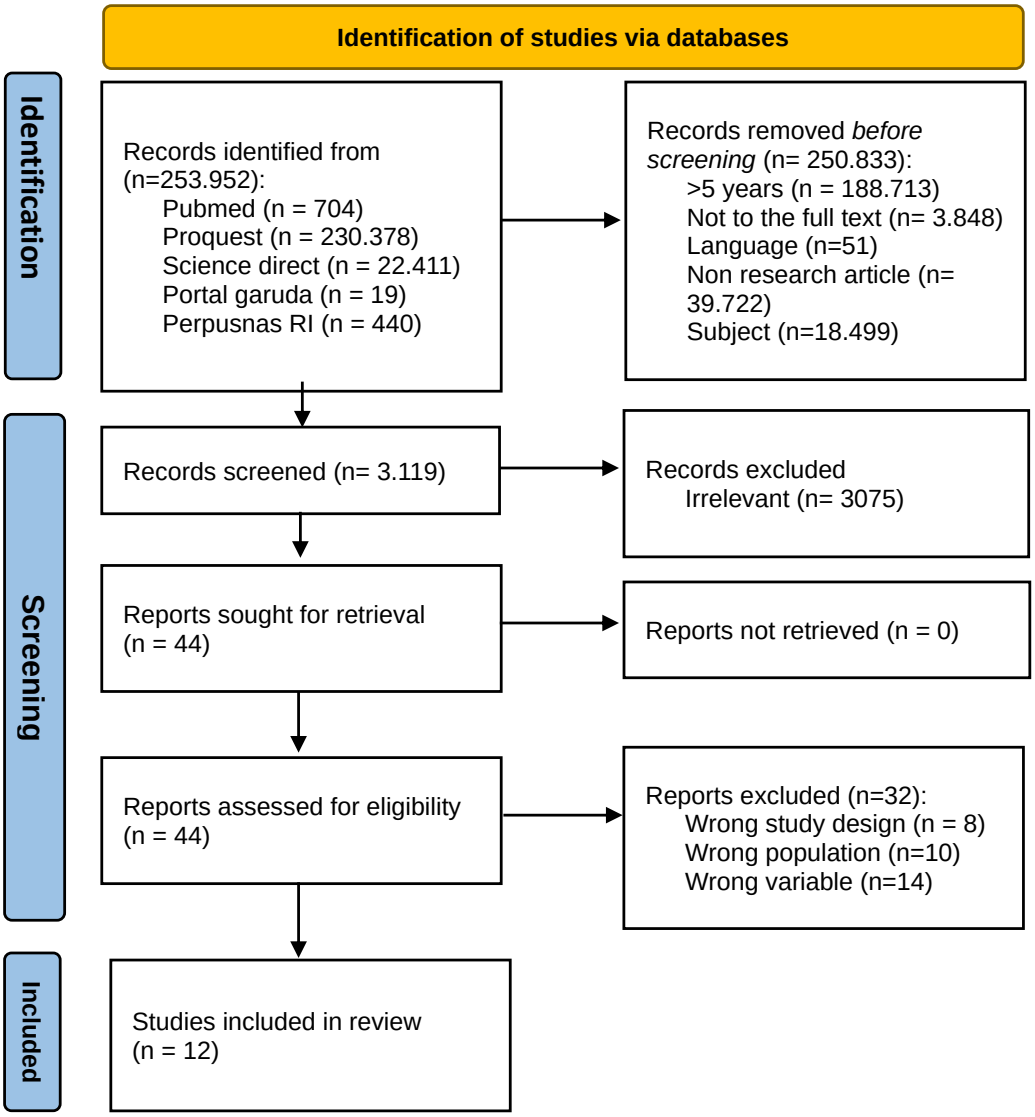

TABLE 1. THE CHARACTERISTIC OF THE INCLUDED STUDY

No.	Author, Year	Tittle	Objective	Setting	Design	Sample
1	F. Ayalew et al., 2019 [11]	Understanding job satisfaction and motivation among nurses in public health facilities of Ethiopia: a cross-sectional study	To examine job satisfaction, motivation and related factors among nurses working in public health facilities in Ethiopia.	125 health facilities (9 hospitals and 116 health centers) in Ethiopia.	A cross-sectional two-stage cluster sampling design was used. First, a random sample of health facilities in 11 regions of the country was selected, and then nurses were randomly selected at each facility in the sample.	424 nurses (390 working in health centers and 34 in hospitals)
2	Baljoon et al., 2019 [12]	Factors affecting nurses' work motivation level at a governmental hospital: A cross-sectional study	This study aims to identify the factors that influence the level of work motivation of nurses in government hospitals in Saudi Arabia.	This study was conducted in a non- profit health hospital recognized as a leading and accredited hospital in Jeddah city. The hospital provides tertiary care by serving the local community with a capacity of 500 beds.	A descriptive cross-sectional study design. Quota sampling technique to recruit all registered nurses working in the hospital with at least one year of experience.	The sample consisted of 280 registered nurses, 252 included staff nurses while 28 were nurses holding managerial positions
3	Mbidi & Damons, 2020 [13]	Effort and reward imbalance factors motivating Namibian professional nurses to participate in continuous professional development: A confirmatory factor analysis	Proposed a model for Effort and Rewards Imbalance (ERI) factors that motivate nurses to participate in continuing professional development activities.	The study was conducted at a teaching hospital in Namibia. The hospital has a bed capacity of 855 beds.	Correlational quantitative research design using cross- sectional survey. The population was 650 nurses consisting of 292 professional nurses, 38 were senior nurses, 11 clinical instructor nurses, one nurse manager and 308 were registered nurses.	270 questionnaires were distributed to nurses; a total of 241 questionnaires were completed and returned representing a response rate of 89%.

4	Li et al., 2022 [14]	Work Motivation of Primary Health Workers in China: The Translation of a Measurement Scale and Its Correlation with Turnover Intention	To directly measure and assess the motivational composition of health workers based on Self-Determination Theory.	Data were collected in six provinces across the eastern, central and western regions of mainland China between April and October 2019. Data were collected from 76 primary healthcare institutions (47 urban and 28 rural).	A cross-sectional study was conducted to Stratified cluster sampling method was applied in this study.	The final sample consisted of 1341 nurses of which 60.2% were selected from the eastern region, 9.9% from the central and 29.9% from the western region of China.
5	Zeng et al., 2022 [15]	Impact of Intrinsic and Extrinsic Motivation on Work Engagement: A Cross-Sectional Study of Nurses Working in Long-Term Care Facilities	To find out the intrinsic and extrinsic work motivation of nurses and its influence on job attachment.	Setting at a health facility located in eastern Japan	This study adopted a cross-sectional design	The research sample was 561 nurses
6	Ramón et al., 2022 [16]	Motivation and Barriers to Research among Nursing Professionals in Southeast Spain	The aim of this study was to establish the main aspects that motivate and complicate nurses to work primarily in nursing research.	The study was conducted at the hospitals of the province of Almeria, Spain	A multicentric cross-sectional descriptive study was conducted.	A total of 91 nursing staff from the District Hospital Almeria province, Spain, was sampled in the study.
7	Negussie & Oliksa, 2020 [17]	Factors influence nurses' job motivation at governmental health institutions of Jimma Town, South-west Ethiopia	The main objective of this study was to assess work motivation and related factors among nurses working in Jimma City Hospital.	It was conducted in Jimma Town, Oromia Region, Southwest Ethiopia at 352 km from the national capital. Jimma City has six hospitals.	Cross-sectional study	A total of 253 nurses participated

8	Anggreini et al., 2019 [18]	Analysis of Factors Affecting Motivation Nurses' Work at Yarsi Pontianak General Hospital	To analyze the factors that influence motivation nurses' work at YARSI Pontianak General Hospital.	Research location in the inpatient room of YARSI Pontianak Hospital	The type of research used is correlational research with the approach of cross sectional	The sample in this study were 32 nurses
9	Fatmawatiet al., 2018 [19]	Analysis of Factors Affecting the Level of Work Motivation of Nurses in the Inpatient Room at Home Al Islam HM Mawardi Sidoarjo Hospital	To analyze the factors that influence the level of nurses' work motivation includes work environment conditions, compensation that is adequate, career security/rewards, and status/responsibility.	This research was conducted in March 2017 in the hospitalization room of Al-Islam HM Mawardi Hospital Sidoarjo.	This study uses a cross sectional method. The sampling approach that was used is Probability Purposive sampling type	The sample in this study were 65 nurses
10	Tiara, 2019 [20]	Factors associated with nurses' work motivation in the hospital Inpatient Room of Petala Bumi Regional General Hospital, Riau Province 2017	to find out what factors which are associated with nurses' work motivation and also know the factors that are most dominantly associated with nurses' work motivation at Petala General Hospital, Riau Province	This study was conducted in the hospital inpatient ward Petala Bumi Riau Province	This type of research uses quantitative methods with a cross sectional approach.	The sample in this study were 43 nurses in surgical inpatient rooms, pediatric internal medicine inpatient rooms and inpatient rooms.
11	Cambu et al., 2019 [21]	Factors that influence nurses' work motivation In the Inpatient Installation of Gmim	to analyze the factors that influence work motivation nurses in the inpatient installation of GMIM Pancaran Kasih Manado general hospital	This research was held in Manado on Inpatient installations that perform nursing care at RSU GMIM Pancaran Kasih Manado,	This research is quantitative research using analytic survey method and cross sectional approach.	Nurses involved in nursing care in Inpatient installation of GMIM Pancaran General Hospital Kasih Manado

		Pancaran General Hospital Kasih Manado 2019		from July to September 2019.		which amounted to 139 people
12	Wihardja et al., 2021 [22]	Factors that influence work motivation Nurse Executives in Caring for Covid-19 Patients In X hospital, Banten	to determine the factors that influence work motivation of executive nurses in caring for COVID-19 patients	The research data were collected in the special care unit for COVID-19 patients at private hospital X in Banten using the total sampling method.	This research is a quantitative study with a correlation description design, using a cross-sectional approach.	The number of respondents was 58 nurses who treats COVID-19 patients

TABLE 2. FACTORS ASSOCIATED WITH MOTIVATION

No.	Author, Year	Motivation instrument	Factors associated with Motivation	Scoping Motivation	
				Intrinsic	**Extrinsic**
1	Ayalew F. et al., 2019 [11]	A structured questionnaire developed by Management Sciences for Health, an international non- governmental organization, and Piloted in Uganda	1. Working conditions 2. Living conditions		Living conditions Working/environmental conditions

2	Baljoon et al., 2019 [12]	The Motivation at Work Scale (MAWS)	High-level needs (knowledge and skills) Shared Value Salary Supervision Additional allowances/fringe benefits Reward Coworkers Nature of work Communication	High-level needs (knowledge and skills) Shared value Reward Nature of work	Salary Supervision Coworkers Communication Fringe benefits
3	Mbidi & Damons, 2020 [13]	Professional development nurses' instrument (Q-PDN)	1. Extrinsic effort 2. intrinsic effort 3. Reward 4. Commitment	Intrinsic effort Reward	Extrinsic effort Communication
4	Li et al., 2022 [14]	The Work Motivation Scale for Health Workers (WMSHW)	Intrinsic motivation Integrated/identified regulation (IDEN) Introjected regulation (INTRO) External regulation-social (EXT-S) External regulation-economic (EXT-E)	Intrinsic motivation	
5	Zeng et al., 2022 [15]	Questionnaire to assess nurses' motivation to work	Interested in community nursing Interested in basic nursing Interested in gerontological nursing Careful nursing care	Interested in community nursing Interested in basic nursing Interested in gerontological nursing Careful nursing care	
6	Ramón et al., 2022 [16]	Questionnaire on motivation towards research in nursing	Age Workplace situation Child ownership Number of children	1. Age	1. Child ownership 2. Workplace situation/ Environmental condition

7	Negussie & Oliksa, 2020 [17]	Questionnaire	Last education Experience		1. Experience
8	Anggreini et al., 2019 [18]		Achievements Recognition Jobs Responsibility Potential development	1. Achievements 2. Recognition 3. Responsibility	
9	Fatmawati, et al. 2018 [19]	Questionnaire	Work environment conditions Adequate compensation 3. Reward 4. Responsibility 5. Fringe benefits	1. Reward 2. Responsibility	1. Work environment 2. Fringe benefits
10	Tiara, 2019 [20]	Questionnaire	Communication		Communication
11	Cambu et al., 2019 [21]	Questionnaire	Recognition Potential development Salary Supervision	1. Recognition	1. Salary 2. Supervision
12	Wihardja et al., 2021 [22]	Questionnaire	Age Marital status Work environment situation	1. Age 2. Work environment	1. Marital status

REVIEW FINDINGS

Based on the review results found, there are intrinsic factors that can increase the work motivation of nurses such as: potential development needs (knowledge and skills) [12,18, 21], reward [12, 13, 19], nature of work [12, 14, 18], intrinsic effort [13, 14], experience [17], commitment [13], intrinsic motivation [14], interested in community nursing [15], interested in basic nursing [15], interested in gerontological nursing [15], careful nursing [15], Age [16 ,22], recent education [17], achievement [18], recognition [18,21], responsibility [18, 19], and shared values [12] (Table 2).

There are also extrinsic factors that can increase nurses' work motivation such as working environment conditions [11, 16, 19], living conditions [11], salary [12, 21], supervision [12, 21], fringe benefits [12, 19], coworkers [12], communication [12, 13, 20], extrinsic effort [13], having children [6], and marital status [12] (Table 2).

DISCUSSION

According to these results, the factors that affect nurses' motivation hospitals are divided into two factors: intrinsic factors and extrinsic factors. Intrinsic factors found in the results are: 1) high-level needs (knowledge and skills), 2) reward, 3) nature of work, 4) intrinsic effort, 5) commitment, 6) intrinsic motivation, 7) interest in nursing community, 8) interest in basic nursing, 9) interest in gerontological nursing, 10) careful nursing, 11) age, 12) experience 13) achievement, 14) recognition, 15) responsibility, 16) shared values. Meanwhile, the extrinsic factors found in this study are: 1) environmental conditions, 2) living conditions, 3) salary, 4) supervision, 5) fringe benefits, 6) coworkers, 7) communication, 8) extrinsic effort, 9) child ownership, 10) marital status.

From an intrinsic motivation view, the ability of nurses to perform their work is not only supported by their willingness and tasks assigned to them but also influenced by their skills and knowledge [21]. In general, nurses are more likely to be self-motivated when their work allows them to satisfy their competence needs (i.e., knowledge and skills) [12, 18]. Rewards play an important role in maintaining employee commitment by ensuring performance and consistency in work standards. Baljoon et al. and Fatmawati et al. showed that providing rewards is one of the factors associated with increasing work motivation among nurses [12, 19]. The nature of work is one of the most important motivational factors for healthcare providers. This was also supported by the other studies [12, 23].

Mbidi & Damons concluded that there is a relationship between intrinsic effort and achievement motivation. Intrinsic effort as a basic desire that encourages individuals to achieve various fulfillment needs through encouragement, interest, and desire [13]. Nurses with high commitment can improve their ability to be more professional and it is related to nurses' motivation [13]. Interest in community is one of the factors that influence the level of work motivation in nurses. In addition, specialization from basic to gerontological and nursing care has a significant effect on increasing motivation. Younger nurses are also more motivated and enthusiastic about their work compared to older nurses [24].

Work experience of nurses showed a significant difference in work motivation levels. More experienced nurses are more likely to be less motivated than those with less experience. Anggreini et al. also showed that achievement has a significant relationship with nurses' work motivation [18]. Recognition is a factor that affects nurses' work motivation. Recognition is needed by employees because it can provide high morale in the work environment and high motivation which can directly drive their skills and energy to maximize the work performance [18, 25]. A theory proposed that the higher the motivational factors (e.g., job performance, recognition, responsibility, shared value), the higher the work motivation of an individual [2, 23].

Furthermore, from the perspective of extrinsic motivation, the work environment is the one that can influence nurses' work motivation. According to Ayalew F. et al, comfortable working conditions, including the presence of complete facilities, complete medicines and the ability to take special measures to protect nurses from nosocomial infections and occupational hazards, will make nurses' work motivation increase [11]. Based on the research conducted by Agata, it was found that there was a significant correlation between work environment and work motivation of nurses, which was divided into two, namely physical work and non-physical work environment [27,28].

Living conditions are one of the extrinsic factors related to motivation. Nurses who have to provide the best school for their children will be motivated to work [11]. According to

Ratanto, rewards for service are the main motivation for an employee to work. If people have high expectations of something, they will be very encouraged to get it; conversely, if expectations are low, motivation will be low [28].

Salary/wages and nurses' work motivation have been found to be associated [21]. Good supervision tends to increase nurses' motivation to provide care. Further, the existence of fringe benefits can increase work motivation [12]. According to Purnawaningrum, it can protect and supplement the basic salary if the company pays all or part of these benefits [29]. Coworker relations have a very strong correlation in which good communication within a company or agency will foster good working relationships among colleagues. Effective teamwork is considered an important motivational factor in healthcare organizations [12].

The success of an organization in achieving its goals cannot be separated from good communication. Effective communication makes it easier for them to do their jobs [30]. The closer and more harmonious the communication, the better the performance of each healthcare worker [4]. Extrinsic motivation is a strong motivation to do a job and requires optimal work. Extrinsic motivation requires extrinsic effort, such as real rewards, therefore, satisfaction comes from extrinsic consequences that guide activities [30].

There is a relationship between the number of children and nurses' work motivation. Nurses without children score higher in the motivation domain compared to nurses who have children [26]. Marital status explains that the state of someone who is married can affect work performance because married has a strong urge to work to meet the needs of their household [12].

The critical points of the findings show that nurses' motivation and its characteristics vary among the reported studies. This implies that motivation from either internal or external sources depends on the situation or problem faced by nurses and the implementation of hospital policy. Moreover, the internal demands are found to affect the motivation more than the external demands. However, both characteristics are urgent to the performance of nurses.

This study has limitations. The studies included in the current review were based only on the last five years and were open access, suggesting that other factors may be involved but not addressed. All included studies used cross-sectional methods, which cannot explain the causal relationship between factors and outcomes. In addition, the study design does not allow conclusions to be drawn about which of the factors most influenced work motivation.

CONCLUSION

This study concluded that factors associated and related to the work motivation of nurses in hospitals can be grouped as intrinsic and extrinsic factors. Intrinsic factors associated with potential development needs, reward, nature of work, intrinsic effort, experience, commitment, intrinsic motivation, interest in community nursing, interest in basic nursing, interest in gerontological nursing, careful nursing, age, recent education, achievement, recognition, responsibility, shared values. Extrinsic factors related to working environment conditions, living conditions, salary, supervision, benefits, coworkers, communication, extrinsic effort, having children, marital status.

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REVIEW ARTICLE

INFLUENCE OF NURSES' EMPOWERMENT ON QUALITY CARE: A COMPREHENSIVE STUDY OF THE LITERATURE

Ana Luiza Ferreira Aydogdu

Faculty of Health Sciences, Department of Nursing. Istanbul Health and Technology University, Istanbul, Turkey

Correspondence: luizafl@gmail.com; ana.luiza@istun.edu.tr

ABSTRACT

BACKGROUND:

The empowerment of nurses is a fundamental strategy for patient safety and consequently, for the success of health institutions. This review aimed to identify in the scientific literature the influence of nurses' empowerment on the quality of care.

METHODS:

An integrative review of literature, in which the PRISMA guidelines were followed, was completed. Articles were evaluated using the Joanna Briggs Institute (2020) Critical Appraisal Tools. The search for primary research articles was carried out in PubMed, Scopus, and Web of Science databases. Data were analyzed using content analysis methods.

RESULTS:

Twelve studies were identified and included in this review. Three themes emerged: (1) the relationship between nurses' empowerment and quality of care; (2) opportunities and challenges of implementing empowerment in nursing; and (3) recommendations for the empowerment of nurses.

CONCLUSION:

Empowerment should be encouraged from college education and maintained in health institutions through continuing education and improvement of working conditions that allow nurses to provide efficient and effective care.

KEYWORDS

empowerment, nurses, nursing, patient safety, quality of healthcare

INTRODUCTION

At first, the term "empowerment" was generally used by feminist women, but later it gained wider usage [1]. In the 1960s in the United States, the term "empowerment" was predominantly associated with feminist movements, where women sought to gain power, autonomy, and control over their own lives. Over time, the concept of empowerment transcended the feminist realm and began to be applied in various areas, including healthcare and, more specifically, in nursing practice. The expanded use of the term "empowerment" reflects a broader societal shift towards valuing autonomy, active participation, and equality [1,2]. "Empowerment" means having power over own life; it is the development or strengthening of skills that lead to positive changes in various aspects of life [2].

As a term associated with management, "empowerment" is related to the process of increasing the decision-making power of individuals and in promoting professional development through cooperation, information sharing, training, and teamwork [3]. Thus, empowering is giving authority, responsibility, and freedom to employees, assessing situations, and providing knowledge and training so that employees can be successful [4,5]. As it is a process that increases autonomy, empowerment is directly associated with the delegation of activities and increased employee motivation [3]. Empowering is to give power. Power, as a term used in management, can be divided into legitimate, reward, expert, referent, and coercive power. So, empowering is to increase legitimate power, develop through education and training, support in reaching resources and opportunities, and increase confidence and motivation [3]. In other words, employee empowerment involves autonomy, competence, community, and fulfillment [3,5].

Regarding the types of empowerment, it is commonly classified into social, educational, economic, political, and psychological [6]. In nursing, the term is widely used and discussed, as it encompasses professional growth and development, fundamental elements for nurses' job satisfaction, and quality care [7]. Empowering nurses gives them more decision-making power and promotes the delegation of activities and information sharing, thus increasing the confidence and motivation of the nursing team [5]. In the field of nursing, structural and psychological empowerment are widely addressed [2]. Structural empowerment is related to access to information, support, resources, and opportunities so that employees can achieve certain goals [2]. Psychological empowerment refers to the individual's internal motivation, resulting in psychological well-being [8]. Studies that address the structural empowerment of nurses associate it with improvements in professional performance [4,9], and therefore, in the quality of care. The psychological empowerment of nurses is also directly associated with professional competence [10].

The more qualified the nursing care, the more successful the health institution. Thus, with the increase in competitiveness in the health sector, efforts are being made to increasingly improve the quality of care provided to individuals and the community [4,11,12]. Empowerment in nursing and healthcare services is pivotal for improving the quality of care. When healthcare professionals, especially nurses, are empowered, they experience increased autonomy, leading to improved patient outcomes, enhanced communication, higher job satisfaction, and retention. Empowerment also promotes innovation, continuous improvement, and a patient-centered approach, ultimately contributing to a more effective and compassionate healthcare delivery system [2,4,7,10]. The empowerment of nurses has become a fundamental strategy for patient safety and, consequently, for the success of health institutions [2,7,13]. Thus, the objective of this study was to identify in the scientific literature the influence of nurses' empowerment on the quality of care. To achieve this, primary research articles on the topic were searched in the PubMed, Scopus, and Web of Science databases. After data analysis using content analysis, themes such as the relationship between nurses' empowerment and the quality of care; opportunities and challenges of empowerment implementation; and recommendations for nurses' empowerment emerged. These themes were then discussed throughout the paper.

METHOD

DESIGN

An integrative review of the literature was conducted through the five steps described by Whittemore and Knafl (2005) [14]. This design facilitates a dynamic exploration of the subject while also fostering critical thinking, providing an opportunity to engage others in meaningful discourse on the topic. In this approach, the synthesis of qualitative and quantitative studies is performed through a process that involves problem identification, literature search, data evaluation, data analysis, and presentation of the review [14].

SEARCH STRATEGY

The terms used in the search for articles were: "nurs*" AND "empowerment" AND "quality of care". Three databases were searched. Searching in the PubMed and Web of Science databases was done by title and abstract, and in the Scopus database by title, abstract, and keywords of the studies. The search for articles published in English was performed in December 2022 and it was not limited by publication date. No date limits were imposed to ensure a comprehensive and inclusive review, enabling the inclusion of a greater number of articles.

INCLUSION AND EXCLUSION CRITERIA

Primary research articles related to "nurse empowerment and quality of care", whose full texts were available on the Internet in English, were included in this review. Systematic or literature reviews, or discussion articles were excluded.

SEARCH OUTCOME

The selection of articles was guided by the PRISMA [Preferred Reporting Items for Systematic Reviews and Meta-analyzes] [15]. A total of 365 articles were initially found through the electronic databases used, and 184 duplicate articles were removed. The number of articles then decreased to 181. Titles and abstracts of the 181 articles were read. Eight articles were excluded for not being original research and 161 for addressing other subjects. Finally, a total of 12 articles were read in detail, and all were included in a quality assessment (Figure 1).

DATA EXTRACTION

General information was organized through a descriptive instrument containing reference, title, journal, country, aim, design, participants, main results, and limitations of the selected articles (Table 1). Relevant data are also included in the quality assessment of selected publications (Table 2).

ANALYSIS

Data analysis was carried out by following several steps, where similar information extracted from the selected articles was compared and organized into themes [14]. Content analysis was used. Through this method, new information based on the synthesis of results from previous original studies can be analyzed and shared [16]. The selected 12 studies were read several times; information was compared, and similar information was coded and organized by themes. Codes identified through data comparison were presented in three themes: (1) the relationship between nurses' empowerment and quality of care; (2) opportunities and challenges of implementing empowerment in nursing; and (3) recommendations for the empowerment of nurses. [Do not delete section break]

FIGURE 1. PRISMA FLOW DIAGRAM OF SEARCH, SCREENING, AND SELECTION OF ARTICLES FOR THE INTEGRATIVE LITERATURE REVIEW

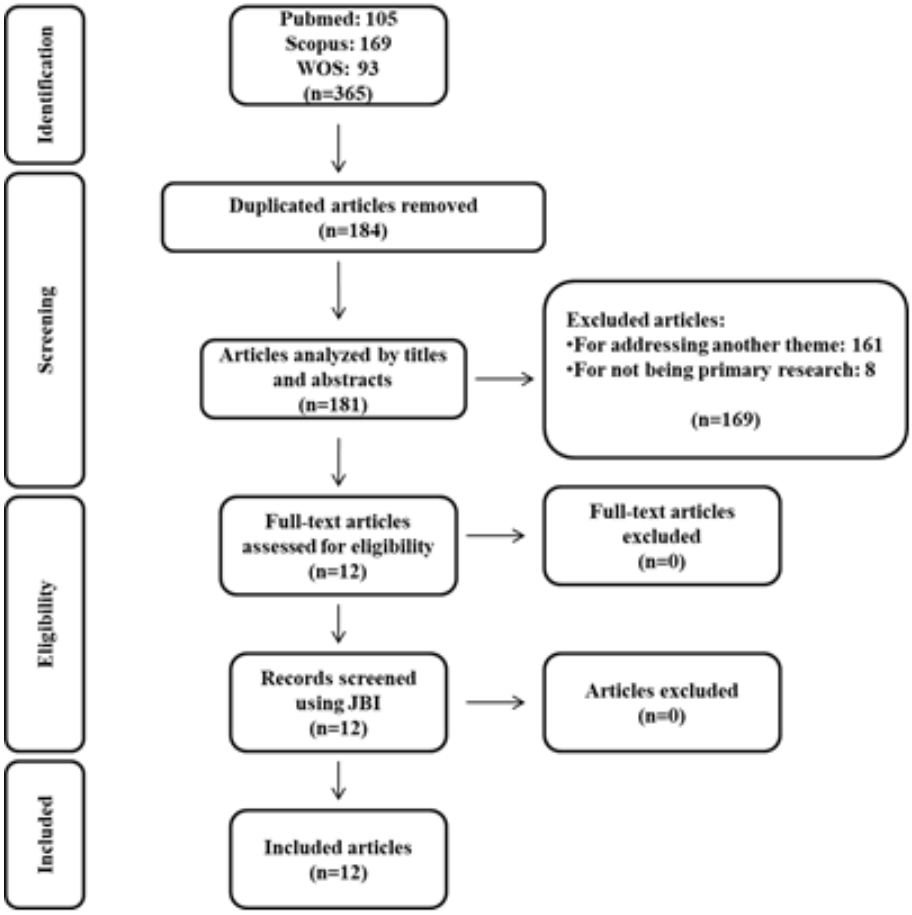

TABLE 1. REVIEWED ARTICLES AND SUMMARY OF RESULTS FOR THE SELECTED PUBLICATIONS USED IN THIS REVIEW STUDY

Author (year)	Title/Journal/ Country	Aim	Design/ Participants	Results	Limitations
Abbasi et al. (2018) [18]	"Effect of moral empowerment program on moral distress in intensive care unit nurses"/Nursing Ethics/Iran	"To provide a moral empowerment program to nursing directors, school of nursing, and the heads of hospitals to reduce moral distress in nurses and improve the quality of care."	A clinical trial carried out in two groups and three stages with 60 nurses. Data were collected using the standard Hamric's Moral Distress Scale.	It was identified that a moral empowerment program can reduce moral distress. Therefore, this kind of program should be implemented to improve the quality of care.	Subjects, the setting, and the criteria for inclusion in the sample were not mentioned. Strategies to deal with confounding factors were unclear.
Ahmad et al. (2022) [19]	"Organizational support and perceived environment impact on quality of care and job satisfaction: a study with Pakistani nurses"/ International Journal of Workplace Health Management/ Pakistan	"To examine the relationship of organizational support and perceived environment on quality of care and job satisfaction, with organizational commitment as a mediator for the first variable."	A cross-sectional study of 352 nurses through a self-designed survey.	It was observed that the empowerment of nurses mediates the relationship between organizational support with the quality of care.	Lack of information about the validation of data collection instruments. Strategies to deal with confounding factors were not mentioned.
Arshadi Bostanabad et al. (2022) [20]	"Clinical competency and psychological empowerment among ICU nurses caring for COVID-19 patients: A cross-sectional survey study"/ Journal of Nursing Management/Iran	"To determine clinical competency and psychological empowerment among ICU nurses caring for COVID-19 patients."	A cross-sectional study of 207 nurses. A clinical competency survey instrument and the Spreitzer psychological empowerment questionnaire were used.	A significant positive relationship between clinical competency and psychological empowerment was identified.	-

Asif et al. (2019) [21]	"Linking Transformational Leadership with Nurse-Assessed Adverse Patient Outcomes and the Quality of Care: Assessing the Role of Job Satisfaction and Structural Empowerment"/ International Journal of Environmental Research and Public Health/Pakistan	"To examine the relationships between transformational leadership (TL), structural empowerment (SE), job satisfaction (JS), nurse-assessed adverse patient outcomes (APO), and the quality of care (QOC)."	A cross-sectional study of 600 nurses. Data were collected through five different scales.	We found a positive relationship between structural empowerment and quality of care.	All participants were female.
Aslani et al. (2016) [22]	"Nurses' Empowerment in Self-Care Education to Stroke Patients: An Action Research Study"/International Journal of Community Based Nursing and Midwifery/ Iran	"To improve the nurses' practice in self-care education to stroke patients."	A qualitative study of 27 nursing personnel. Data were collected via interviews and focus groups.	Themes: professional development and effective factors on patient education.	Unclear information about the methodology and its congruence with research objectives. Lack of information about the researchers and their relationship with participants.
Hosseinzadeh & Barzegar (2016) [23]	"Survey the relationship between professional ethics and improve the quality of care with nurses, staff empowerment of the perspective of Ayatollah Rouhani	"To determine the relationship between the ethics of the profession and improve the quality of care with nurses, hospital staff empowerment from	A descriptive study of 163 nurses. Data were collected through a questionnaire.	Significant relations between professional ethics, quality of care and staff empowerment were identified.	Strategies to deal with confounding factors were not mentioned.

	hospital of Babol"/ International Journal of Medical Research & Health Sciences/Iran	the perspective of Ayatollah Rouhani."			
Hu et al. (2022) [24]	"Clinical nurses' moral courage and related factors: an empowerment perspective"/ BMC Nursing/ China	"To investigate moral courage and related factors among frontline nurses from an empowerment perspective"	A cross-sectional study of 226 nurses. Data were collected using a form of demographic characteristics, Conditions for Work Effectiveness II (CWEQ-II), Spreitzer's Psychological Empowerment Scale (PES) and Nurses' Moral Courage Scale (NMCS).	Structural and psychological empowerment affect the promotion of moral courage, and moral courage is important in improving the quality of care.	All participants were female. Strategies to deal with confounding factors were not mentioned.
Kuokkanen et al. (2016) [25]	"Newly graduated nurses' empowerment regarding professional competence and other work-related factors"/ BMC Nursing/ Finland	"To determine how newly graduated nurses assess their empowerment and to clarify professional competence compared to other work-related factors."	A descriptive, cross-sectional and correlational study of 318 nurses. The Qualities of an Empowered Nurse scale and the Nurse Competence Scale were used and a form of demographic/background characteristics were used.	It was observed an association between nurse empowerment and professional competence. Satisfaction with the quality of care in the work unit was positively correlated to empowerment.	-
Malak & Safieh (2022) [26]	"Association between work-related psychological empowerment and quality of nursing care among critical care nurses"/	"To examine the association between work-related psychological empowerment and quality of nursing care in Jordanian critical care nurses."	A cross-sectional study of 480 nurses. Data were collected via a socio-demographic data form, the Psychological Empowerment Instrument and the Karen-personnel instrument.	Psychological empowerment is necessary to improve the quality of nursing care.	Strategies to deal with confounding factors were not mentioned.

	Journal of Nursing Management/ Jordan				
Meng et al. (2014) [27]	"Relationships among structural empowerment, psychological empowerment, intent to stay and burnout in nursing field in mainland China—based on a cross-sectional questionnaire research"/International Journal of Nursing Practice/China	"To explore the relationship among perceived structural empowerment, psychological empowerment, burnout and intent to stay by nurses in mainland China."	A cross-sectional study of 219 nurses. Data were collected via a background data form and four different scales.	Participants who perceived high levels of structural empowerment would have a sense of high levels of psychological empowerment, which would reduce burnout and increase intent to stay. Thus, increasing the quality of care.	-
Van Bogaert et al. (2015) [28]	"Nurse managers' perceptions and experiences regarding staff nurse empowerment: a qualitative study"/Frontiers in Psychology/ Belgium	"To study nurse managers' perceptions and experiences of staff nurse structural empowerment and its impact on the nurse manager leadership role and style."	A qualitative study of eight nurses. Data were collected via individual semi-structured interviews.	Themes: vision of empowerment; structural empowerment policy; nurse managers' roles; and suggestions to improve the empowerment policy.	Lack of information about the researchers and their relationship with participants.

Van Bogaert et al. (2016) [29]	"Staff Nurses' Perceptions and Experiences about Structural Empowerment: A Qualitative Phenomenological Study /Plos One /Belgium	"To investigate staff nurses' perceptions and experiences about structural empowerment and perceptions regarding the extent to which structural empowerment supports safe quality patient care."	A qualitative study of 11 nurses. Data were collected via individual semi-structured interviews.	Themes related to meaning, experiences opportunities and challenges of empowerment, level of involvement, quality of care, level of education and training were identified.	Lack of information about the researchers and their relationship with participants.

QUALITY ASSESSMENT

Articles were evaluated using the Joanna Briggs Institute (JBI) Critical Appraisal Tools [17]. Using these tools, it is possible to assess the quality of articles of different methodological designs. Although no articles were excluded based on the quality assessment, some methodological weaknesses were identified. In quantitative studies, the most commonly detected weakness was related to the lack of information on approaches used in addressing confounding factors. As for qualitative studies, the lack of information about the researchers and their relationship with participants was the most common weakness identified. The results of the quality assessment are shown in Table 2. In total, 12 articles were finally included in this review.

TABLE 2. JOANNA BRIGGS INSTITUTE (JBI) CRITICAL APPRAISAL TOOLS* QUALITY ASSESSMENT

Reference	1.Qualitative studies										2.Cross-sectional studies								Decision
Criteria**	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	
Abbasi et al. (2018) [18]											U	N	Y	Y	Y	U	Y	Y	I
Ahmad et al. (2022) [19]											U	Y	Y	Y	Y	N	Y	Y	I
Arshadi Bostanabad et al. (2022) [20]											Y	Y	Y	Y	Y	Y	Y	Y	I
Asif et al. (2019) [21]											Y	Y	Y	Y	Y	Y	Y	Y	I
Aslani et al. (2016) [22]	U	U	Y	Y	Y	N	N	Y	Y	Y									I
Hosseinzadeh & Barzegar (2016) [23]											Y	Y	Y	Y	Y	N	Y	Y	I
Hu et al. (2022) [24]											Y	Y	Y	Y	Y	N	Y	Y	I
Kuokkanen et al. (2016) [25]											Y	Y	Y	Y	Y	Y	Y	Y	I
Malak & Safieh (2022) [26]											Y	Y	Y	Y	Y	N	Y	Y	I
Meng et al. (2014) [27]											Y	Y	Y	Y	Y	Y	Y	Y	I
Van Bogaert et al. (2015) [28]	Y	Y	Y	Y	Y	N	N	Y	Y	Y									I
Van Bogaert et al. (2016) [29]	Y	Y	Y	Y	Y	N	N	Y	Y	Y									I

*JBI Critical Appraisal Tools were developed by the Joanna Briggs Institute (University of Adelaide, South Australia) to assess the quality of studies of various methodological designs included in systematic reviews [17].

**Criteria: Screening questions:

1. Qualitative studies: (1.1) Is there congruity between the stated philosophical perspective and the research methodology? (1.2) Is there congruity between the research methodology and the research question or objectives? (1.3) Is there congruity between the research methodology and the methods used to collect data? (1.4) Is there congruity between the research methodology and the representation and analysis of data? (1.5) Is there congruity between the research methodology and the interpretation of results? (1.6) Is there a statement locating the researcher culturally or theoretically? (1.7) Is the influence of the researcher on the research, and vice-versa, addressed? (1.8) Are participants, and their voices, adequately represented? (1.9) Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body? (1.10) Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?

2. Cross-sectional studies: (2.1) Were the criteria for inclusion in the sample clearly defined? (2.2) Were the study subjects and the setting described in detail? (2.3) Was the exposure measured in a valid and reliable way? (2.4) Were objective, standard criteria used for measurement of the condition? (2.5) Were confounding factors identified? (2.6) Were strategies to deal with confounding factors stated? (2.7) Were the outcomes measured in a valid and reliable way? (2.8) Was appropriate statistical analysis used? E: excluded; I: included N: no; U: unclear; Y: yes.

RESULTS

For this study, 12 research publications were selected, encompassing articles from 10 different journals. Four (30.33%) studies are from 2016, and four (30.33%) are from 2022. Studies were conducted in Iran (n=4), Belgium (n=2), China (n=2), Pakistan (n=2), Finland (n=1), and Jordan (n=1). The number of nurse participants varied from eight to 600. In nine studies, the majority of participants were female; in two studies, all participants were female [21,24]; and in one study, gender was not mentioned [28]. Concerning methodology; nine (75%) studies were quantitative and three (25%) were qualitative.

Empowerment in nursing was discussed in a variety of ways in the 12 articles. While two articles addressed empowerment in general [23, 25], one study addressed empowerment related to the care provided to a specific group of patients [22]. Structural empowerment was addressed in six articles [19,21,24,27-29]. Psychological empowerment was discussed in four studies [20,24,26,27]. One article addressed moral empowerment [18]. All studies reported the relationship between nurses' empowerment and the quality of care.

RELATIONSHIP BETWEEN NURSES' EMPOWERMENT AND QUALITY OF CARE

The included studies identified a relationship between nurse empowerment and quality of care. There is a correlation between nurse empowerment and professional competence, job satisfaction [25], ability to make decisions [29], and therefore, quality of care [25,29]. It was found that empowering nurses through programs that develop skills and knowledge increases their self-confidence, intensifies relationships with patients, and improves the quality of care [22]. Nurses believe that empowerment is involvement at all institutional levels, accumulating knowledge, and making efforts to improve nursing care [28]. In turn, the organizational commitment of nurses is positively influenced by institutional support, which increases job satisfaction and, consequently, the quality of care [18].

The scientific literature also identified that transformational leadership has a strong relationship with quality of care, while structural empowerment and job satisfaction seem to be potential mediators of such relationships [21]. Leadership styles influence nurse empowerment since nurse leaders present important roles in empowering nurses [28]. It is important to notice that nurse managers know that structural empowerment has a positive impact on nurses, quality of care, and patient safety [28]. In addition, the structural empowerment of nurses leads to psychological empowerment [27], and psychological empowerment of nurses positively affects the quality of care [26] since it increases nurses' clinical competence [20] and decreases the prevalence of burnout and the intention to leave [27]. Therefore, moral empowerment programs are important in reducing moral distress in nurses and improving nursing care [18].

OPPORTUNITIES AND CHALLENGES OF IMPLEMENTING EMPOWERMENT IN NURSING

The importance of empowering nurse managers and staff nurses was emphasized [28]. However, the scientific literature pointed out that empowering experienced nurses can be a challenge since empowerment programs are better accepted by young nurses [27,28], who usually evaluated their empowerment levels as high [25]. The role of nursing leaders was identified as important to support the team and implement a leadership style that leads to nurse empowerment. The importance of teamwork [28], as well as the relationship between staff nurses and their managers, were pointed out as pivotal to experiencing empowerment [29] since moral and ethical management increases the quality of nursing care and the feeling of empowerment [23]. In other words, nurses' moral courage, which is the courage needed to act during ethical conflicts, is affected by structural and psychological empowerment, and ethical attitudes are necessary for nurses to provide quality care [24].

Despite the several advantages of empowerment, some nurse managers believe that empowerment increases the workload and pressure on nurses [28,29]. Lack of time and seeing empowerment as an obligation were also pointed out as barriers to nurse empowerment [29]. Thus, it was emphasized the importance of sufficient staff and time for the implementation of empowerment programs in nursing [28]. Another challenge for the implementation of empowerment strategies is the lack of information due to inefficient communication [29]. Also, the difference between learning about nursing empowerment in theory and putting its knowledge into practice was addressed by nurse managers [28].

RECOMMENDATIONS FOR THE EMPOWERMENT OF NURSES

Studies provided recommendations for the implementation of empowerment programs for nurses. It was pointed out that health organizations should plan and implement

empowerment programs to improve nurses' skills [22,28], which will prevent adverse events and increase job satisfaction [21]. It was identified that nurse preceptors [28] and nurse leaders must develop actions to empower nurses [23,27]. The empowerment of nurses should be implemented through workshops [18,22], and improvements in working conditions [19]. It is necessary to emphasize the importance of empowering newly graduated nurses since they need support and career opportunities [25]. Organizational, workgroup and individual levels should be analyzed during the empowerment process so that nurses can reach job satisfaction and motivation which in turn improve the quality of care [19].

Empowerment is essential to enhance the image of nurses, and continuously improve the health system. Consequently, strategies to boost communication should be planned and be part of the empowerment policy of health institutions [28]. Policymakers and nurse managers should, therefore, implement strategies to promote structural [28] and psychological empowerment as they favor the provision of high-quality care [26].

DISCUSSION

This integrative review was carried out to identify in the scientific literature the influence of nurses' empowerment on the quality of care. Studies identified that empowering nurses increases professional competence, job satisfaction, and decision-making abilities, and decreases burnout and intention to leave, thus increasing the quality of care. Nurses' poor working conditions, so discussed in several studies, also appear in this integrative review as barriers to the implementation of programs to empower nurses since high workload, shortage of human and material resources, insufficient time, miscommunication, lack of in-service training, and ineffective leadership were pointed out as big challenges for the empowering of nurses. In addition, it may be more difficult to empower experienced nurses. On the other hand, effective teamwork has a positive impact on the nurses' empowerment process. Nurse leaders, nurse preceptors, and health facilities administrators should empower nurses through workshops, training, and improvement of working conditions. Moreover, the empowerment of nurses should be more addressed since improving the quality of care, also improves the image of the profession in society.

The effects of nurses' job satisfaction on the quality of care are widely discussed in the scientific literature [30,31]. Studies show that satisfied nurses are less likely to intend to leave their jobs [32,33]. A study carried out in Ethiopia identified a relationship between job satisfaction and intention to stay [33]. The intention to leave the job, in turn, negatively affects the quality of care [34]. Another obstacle to providing effective and efficient care is burnout syndrome, a common illness among nurses and discussed in several studies, which show how harmful the syndrome can be for healthcare workers and for the patients cared for by them [35,36]. A study carried out in Iran identified a relationship between high levels of burnout in nurses and reduced quality of care [36]. In addition, leadership skills are associated with patient safety since nurses' ability to lead and make decisions affect the nursing care [37, 38]. A bibliometric analysis carried out to identify trends and hot topics in nurse empowerment emphasized that keywords such as "job satisfaction", "leadership", "retention", and "burnout" are among the most used by authors who addressed the theme [13]. Thus, measures to increase nurses' job satisfaction, intention to stay, leadership skills, and decrease burnout must be taken to ensure patient and worker safety. One of these measures is the empowerment of nurses [39-41].

The poor working conditions of nurses are also barriers to providing qualified care [32], in addition to putting the physical, mental and social health of nurses at risk [42]. Nursing shortages, high workloads, and lack of medical material are some of the problems faced by nurses around the world [32,43]. Adverse working conditions can be an impediment to nurses' empowerment since problems in the work environment can make nurses feel devalued and unmotivated [44,45]. Thus, nurse managers play a pivotal role in developing a work environment that enables the empowerment of nurses [46].

There is no quality nursing care without effective communication and teamwork [47]. On the other hand, teamwork, adequate communication, and the will to improve are important factors in the nurse's empowerment process. It is important to notice that, generally, nurses are resistant to changes [48], however, newly graduated nurses seem to better accept changes in their routines, and thus the empowerment process may be easier for them. An international survey emphasized that newly graduated nurses must be trained to make decisions, communicate efficiently, and develop teamwork, in other words, they must be prepared to be nurse leaders in the future [49]. On

the other hand, a study carried out in Poland identified that experienced nurses had lower levels of empowerment [50], which demonstrates that special attention should also be given to this group of nurses. Therefore, innovative empowerment programs involving experienced and newly graduated staff nurses and supervisors must be developed to ensure patient safety [51].

Many studies address devaluation by society as one of the major problems faced by nurses [52,53]. The role of nursing leaders, nursing educators, and administrators of health institutions is fundamental for the support and training of nurses [45,54,55]. In addition, through reforms in public policies, nurses can be empowered, and the image of nursing can be more valued in society [44].

LIMITATIONS

This integrative review of the literature has some limitations. The search was performed only by title/abstract/keywords of studies published in English. In addition, other important databases were not searched, thus, some articles may not have been found due to the search criteria. However, the included studies, published over a recent eight-year period, enabled a relevant analysis of the importance of nurse empowerment for the quality of care.

CONCLUSIONS

The empowerment of nurses brings many benefits to the professionals themselves and to patients. Empowered nurses are more satisfied and competent, which favors patient safety. Therefore, the empowerment of nurses is important for the success of health institutions and should be encouraged from college and maintained in health institutions through continuing education and improvement of working conditions that allow nurses to provide efficient and effective care. Further research, conducted using broader search criteria, should be undertaken to find and analyze additional sources that link nurse empowerment with quality of care.

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CONFLICT OF INTEREST STATEMENT

The author declares that there is no conflict of interest with respect to the research, authorship, and/or publication of this article.

AUTHOR'S CONTRIBUTION

Plan and design; Material, methods and data collection; Data analysis and comments; Writing and corrections: A.L.F.A.

ETHICAL APPROVAL

No ethical approval was required for this paper as it is an integrative review that used data in the public domain.

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REVIEW ARTICLE

DISEASE PATTERNS AMONG PATIENTS SEEKING EMERGENCY AND INTENSIVE CARE: A SINGLE-HOSPITAL STUDY IN NORTH CENTRAL VIETNAM IN 2020

Son Thai Dinh[1], Hai Thanh Phan[1], Sy Van Le[2], Cuong Van Le[2], Long Duy Le[2], Hoat Ngoc Luu[3], Hai Bui Hoang[1]*

1 Hanoi Medical University, Hanoi, Vietnam

2 Thanh Hoa General Hospital, Thanh Hoa, Vietnam

3 Phenikaa University, Hanoi, Vietnam

Correspondence: hoangbuihai@hmu.edu.vn

ABSTRACT

OBJECTIVE:

This retrospective study aims to describe the disease patterns among patients admitted to intensive care units (ICUs) in a public provincial hospital in North Central Vietnam in 2020.

DESIGN:

We conducted a retrospective descriptive study.

SETTING:

The study was conducted in the Thanh Hoa General Hospital, Thanh Hoa Province, Vietnam. The study included all emergency and critical care admissions hospitalized from January 1, 2020 to December 31, 2020.

MAIN OUTCOME MEASURES:

Data on age, gender, hospital admission, and discharge dates, length of hospital stays, illness chapters (based on ICD-10 codes), and treatment results determined at the hospital discharge of 27,152 episodes of ICU admission were collected.

RESULTS:

The three illness chapters of ICD-10 with the most patients were Chapter IX-Diseases of the Circulatory System, Chapter XI-Diseases of the Digestive System, and Chapter XIX-Injury, Poisoning, and Some Other Consequences of External Causes, with 21.6%, 21%, and 20.3% of patients, respectively. Most episodes (n = 21,999, 81.0%) showed improved health at the time of hospital discharge, with up to 87% of patients finding a cure.

CONCLUSIONS:

The insights gained from this study can inform healthcare strategies, resource planning, and policy decisions to enhance the delivery of critical care services in the region. Further research and ongoing surveillance will be essential to adapt healthcare systems to the evolving landscape of diseases and to ensure the continued improvement of patient outcomes in intensive care settings.

KEYWORDS

disease patterns, ICUs, ICD-10, morbidity, mortality.

INTRODUCTION

Knowing a community's illness and trends in mortality is critical for creating suitable healthcare strategies. These trends represent a community's living conditions, political and economic contexts, social culture, and societal habits. ICUs are critical care facilities where people with serious diseases receive expert medical treatment. Mortality is the most prevalent indicator of ICU results because it is readily quantifiable and patient-centered, making it an important sign for healthcare policies.[1] Disease patterns have been analyzed in both developed and developing countries to inform and enhance healthcare policies and services. Non-communicable diseases are common in developed countries, and the main causes of mortality are heart disease, malignancy, and stroke.[2] Meanwhile, in developing countries like Vietnam, the disease patterns are changing to include more chronic non-communicable and lifestyle-related conditions. The increasing prevalence of these illnesses places an extra strain on healthcare financing.[3]

The severity of disease patterns is useful for supporting clinical decisions and accurate evaluation of a patient's condition. This approach allows healthcare workers to assess the prognosis of patients in critical care, allowing them to distribute the resources needed to handle the diseases properly. Clinical decisions, on the other hand, eventually rest with doctors and should be based on various variables, including the seriousness of the disease.[4]

Given the importance of analyzing disease patterns, this study aims to demonstrate a pattern of severe diseases in the emergency department of a provincial hospital in Vietnam in 2020. By analyzing the disease patterns, the study identifies the most common and severe illnesses among patients and explores their progression and treatment outcomes. The findings of this study will inform healthcare policies, improve preventive treatments and training, and aid scientific research to improve patient outcomes.

METHODS

STUDY SETTING

Thanh Hoa is a province on the northern central coast of Vietnam. It is the region's fifth-largest province and the third largest of the 63 central government subdivisions. Its strategic location, where Thanh Hoa is a transitional area between North Vietnam and the Central North Coast, is characterized by geology, climate, administrative division, and local culture. The province is divided into two provincial cities, one district-level city, and 24 rural districts. There are 1,200 beds in Thanh Hoa Provincial General Hospital, 44 of which are in the ICU.

STUDY DESIGN AND DATA SOURCE

We conducted a retrospective descriptive study using emergency and intensive care unit patient data. Data were exported from the Hospital Management Software of the Emergency Department at Thanh Hoa General Hospital. The study included all emergency and critical care patient admissions hospitalized from January 1, 2020, to December 31, 2020 totaling 27,152 admissions.

SAMPLE AND VARIABLES

The research sample included 27,152 emergency and critical care admissions corresponding to 21,584 patients. The choice to specifically examine patients admitted to emergency and intensive care units allows for a detailed exploration of the disease patterns in these acute care environments. Data was gathered for each admission and included a variety of characteristics considered significant for the investigation. Age, gender, time of hospital admission, length of hospital stay, ICD-10 disease chapter, and treatment outcomes at the time of hospital discharge were among the variables collected for each admission. Each patient's age was computed by subtracting their birth year from 2022. The time of hospital admission was categorized as either morning or afternoon and year quarter (in the Vietnamese calendar, the Gregorian year is divided into four quarters, each spanning three months. Quarter 1 encompasses January 1 to March 31, Quarter 2 extends from April 1 to June 30, Quarter 3 covers July 1 to September 30, and Quarter 4 runs from October 1 to December 31). The length of hospital stay was estimated by subtracting the time of discharge from the time of entrance, which indicated the length of hospitalization, measured in days.

The International Classification of Diseases, Tenth Revision (ICD-10) codes were used to categorize the illnesses. The codes utilized in this research were divided into chapters according to the kind of disease or condition. In this study, the diagnosis according to the ICD at the time of patient discharge is utilized to ensure accuracy in describing the disease patterns within the hospital's emergency department. At discharge, treatment results were graded

as recovery, improvement, unchanged, worsened, or death. The treatment result is derived from the medical records, and the physician in charge determines this information. 'Recovery' denotes the comprehensive restoration of a patient's health to normalcy, while 'Improvement' means a positive change in the patient's health status, reflecting progress toward recovery, even if complete restoration has not yet been achieved. 'Unchanged' describes a situation where the patient's health remains stable, showing neither significant improvement nor deterioration. 'Worsened' indicates a negative shift in the patient's health, reflecting a decline or worsening of their medical condition.

DATA MANAGEMENT AND ANALYSIS

The exported data were imported into the RStudio (Posit PBC) program for analysis. Descriptive statistics were used to characterize the concentration and dispersion of quantitative data, such as mean or median and standard deviation or interquartile range, respectively. Meanwhile, qualitative variables were described using frequency and percentage. The Chi-squared test was used to compare death rates among independent factors. The statistical significance threshold was set at 0.05.

ETHICS STATEMENT

The study was approved by the Ethics Committee at Thanh Hoa General Hospital (Certificate No. 15/HĐKH-BV dated 06/09/2021).

RESULTS

The sociodemographic characteristics of the study participants provide insights into the disease burden among patients referred to the critical care units at Thanh Hoa General Hospital in 2020. This study included 27,152 admissions, with a median age of 56 years old and an interquartile range (IQR) of 38-70 years of age. Regarding gender distribution, 61.8% of the study subjects were male. The number of inpatients stayed relatively high over the four quarters of the year, ranging from 23.3% to 27.1%. Patients were more likely to be admitted to the hospital in the morning, accounting for over 62.8% of all admissions.

TABLE 1. SOCIO-DEMOGRAPHIC CHARACTERISTICS

Variables (n = 27,152)	*n*	%
Age*	56	38 - 70
Gender		
Male	16,773	61.8
Female	10,379	38.2
Hospitalization		
Q1	6,314	23.3
Q2	6,534	24.1
Q3	6,942	25.6
Q4	7,362	27.1
Hospitalization time		
AM	17,051	62.8
PM	10,101	37.2

* Median / IQR

Table 2 reveals the distribution of illness chapters among patients hospitalized at Thanh Hoa General Hospital's emergency department in 2020. ICD-10 Chapter XI (Diseases of the Digestive System), Chapter XIX (Injury, poisoning, and some other consequences of external sources), and Chapter IX (Diseases of the Circulatory System) had the highest number of episodes, accounting for 21.6%, 21%, and 20.3% of total admissions, respectively. Notably, these three chapters accounted for more than 60% of the total cases examined in this research, demonstrating the tremendous impact of these illnesses on Thanh Hoa's population.

Chapter XIV (Diseases of the genitourinary system) and Chapter X (Diseases of the respiratory system) ranked fourth and fifth with a percentage of 9.7% and 6.9%, respectively. The remaining chapters accounted for less than 5% of total admissions. In particular, Chapter II - Neoplasms, which encompassed all types of cancer, accounted for only 2.6% of total admissions, notwithstanding the high incidence of

cancer globally. However, this finding may be attributed to the fact that Thanh Hoa General Hospital is a tertiary care facility, and cancer patients may be referred to specialized centers for treatment.

Table 3 shows the duration of hospital stay and treatment outcomes of patients. Half of the patients were in the hospital for fewer than six days, and just a quarter stayed for more than 9 days. The majority of patients (n = 21,999, 81.0%) had improved their medical status at the time of hospital discharge, and up to 87% were cured. Nevertheless, a small number of patients (4.7%) showed no improvement in their medical status, and 5.2% were discharged in worse health than when they arrived, given that 12.5% of patients were released from the hospital at the request of the patient's family. Among the 3,397 patients discharged upon family request, approximately 19.3% showed improvement and recovery, while 41% experienced a more severe progression in their condition.

TABLE 2. ICD-10 DISEASE CHAPTERS

No	Chapter (n = 27,152)	*n*	%
1	Chapter XI - Diseases of the digestive system	5,863	21.6
2	Chapter XIX - Injury, poisoning, and certain other consequences of external causes	5,686	21.0
3	Chapter IX - Diseases of the circulatory system	5,512	20.3
4	Chapter XIV - Diseases of the genitourinary system	1,997	7.4
5	Chapter X - Diseases of the respiratory system	1,736	6.4
6	Chapter XVIII - Symptoms, signs, and abnormal clinical and laboratory findings, not elsewhere classified	1,331	4.9
7	Chapter I - Certain infectious and parasitic diseases	1,010	3.7
8	Chapter VI - Diseases of the nervous system	791	2.9
9	Chapter XIII - Diseases of the musculoskeletal system and connective tissue	781	2.9
10	Chapter II - Neoplasms	702	2.6
11	Chapter III - Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	424	1.6
12	Chapter XXI - Factors influencing health status and contact with health services	398	1.5
13	Chapter IV - Endocrine, nutritional and metabolic diseases	369	1.4
14	Chapter VIII - Diseases of the ear and mastoid process	286	1.1
15	Chapter XII - Diseases of the skin and subcutaneous tissue	73	0.3
16	Chapter V - Mental and behavioural disorders	64	0.2
17	Chapter XVII - Congenital malformations, deformations, and chromosomal abnormalities	39	0.1
18	Chapter VII - Diseases of the eye and adnexa	35	0.1
19	Chapter XV - Pregnancy, childbirth and the puerperium	32	0.1
20	Chapter XX - External causes of morbidity and mortality	15	0.1
21	Chapter XVI - Certain conditions originating in the perinatal period	1	0.0

TABLE 3. LENGTH OF HOSPITAL STAY AND TREATMENT OUTCOME

Variables (n = 27,152)	n	%
Number of days in hospital*	6	(3 – 9)
Treatment outcome		
Improvement	21999	81.0
Recover	2,354	8.7
Unchanged	1,280	4.7
Worsened	1,399	5.2
Death	120	0.4
Discharge		
Hospital allows discharge	23,752	87.5
Requested to be discharged by family's patient	3,397	12.5

* median / IRQ

Table 4 presents the association between the length of hospital stay in hours and treatment outcomes. The results indicate that 50% of deaths were patients hospitalized for less than one hour, and 75% of them were hospitalized for less than two hours. Patients with an unchanged condition at discharge had a median hospital stay of 24 hours, while those with a worsened condition had a median stay of 21 hours. The Mann-Whitney test revealed a statistically significant difference in the length of hospital stay between patients with different treatment outcomes ($p<0.001$).

The relationship between disease chapter, gender, and mortality status of patients is presented in Table 5. The majority of patient deaths (n = 116, 96.7%) were caused by diseases of the circulatory system (Chapter IX). Specifically, the ICD codes for these 116 cases included I21 - Acute myocardial infarction (n = 1), I46 - Cardiac arrest (n = 114), and I77.2 - Stricture of artery (n = 1). The remaining four deaths were caused by codes T07 - Unspecified multiple injuries (n = 2), R57.1 - Hypovolemic shock (n = 1), and S06 - Intracranial injury (n = 1). Mortality rates were higher in males than in females, and the difference was statistically significant with the Chi-squared test ($p < 0.001$). The age of the group that died was lower than that of the group that survived. Additionally, 50% of the survivors had a hospital stay of six days, while 75% of the patients who died had a hospital stay of only one day.

TABLE 4. RELATIONSHIP BETWEEN TREATMENT OUTCOME AND LENGTH OF HOSPITAL STAY (HOURS)

(n = 27,152)	Median	IQR	*p*
Improvement	142	73 – 220	
Recover	162	102 – 235	
Unchanged	24	4 – 103	< 0.001
Worsened	21	7 – 84	
Death	1	0 - 2	

TABLE 5. FACTORS ASSOCIATED WITH MORTALITY STATUS

	Survival (n = 27,032)		Dead (n = 120)		
(n = 27,152)	***n***	**%**	***n***	**%**	***p***
Disease chapter					<0.001
Chapter IX - diseases of the circulatory system	5,396	20.0	116	96.7	
Chapter XIX - Injury, poisoning and certain other consequences of external causes	5,683	21.0	3	2.5	
Chapter XVIII - Congenital malformations, deformations and chromosomal abnormalities	1,330	4.9	1	0.8	
Others	14,623	54.1	0	0.0	
Gender					<0.001
Male	16,679	99.4	94	0.6	
Female	10,353	99.7	26	0.3	
Age	56[38 - 70]		51[35- 64]		0.019
Number of days in hospital	6[3 – 9]		0 [0- 0]		<0.001

DISCUSSION

The current study explains the condition of patients brought to the emergency section of the Thanh Hoa general hospital, an important spot in the health system of Vietnam's North Central region. Investigating disease patterns assists the health system in better delivering services and handling public health holistically. The findings of this research can be used to plan and implement interventions to improve the capability of emergency rooms in province general hospitals to gradually decrease the community's mortality rate and enhance health care.

According to our results, the median age of patients admitted to intensive care at the Thanh Hoa General Hospital in 2020 was 56 years, with an interquartile range of 38 to 70 years. With over 50% of patients aged over 56 and 25% over 70, the study results indicate a high prevalence of severe illnesses, aligning with previous research findings. Patients over the age of 65 made up 60% of all critical care unit entries in the United States, with a fatality rate of 34.8%.[5] Physical recovery was strongly related to being younger.[6] This emphasizes the significance of creating customized care plans for elderly patients and ensuring that healthcare workers are educated to meet the specific requirements of this group.

When analyzing the prevalence of illness and patient results, the gap between men and women of patients in the ICU is a crucial aspect to consider. Over 60% of the research subjects were males, which aligns with previous studies, showing a greater percentage of men as patients in ICUs.[7] Gender was pointed out to be a major component in forecasting ICU deaths. In this research, the mortality rate in men (0.6%) was higher compared to women (0.3%), and the difference is statistically significant. However, in previous studies, the gender differences in ICU mortality were unclear.[8] There are various biological, behavioral, and societal reasons for this difference, such as variations in immunological and endocrine reactions in men and women, biological and behavioral explanations, and lifestyle and healthcare-seeking differences.[9] Further research is required to fully comprehend the fundamental roots of this issue and create efficient strategies to tackle the issues.

Based on our study, there was a slight increase in the number of people admitted to intensive care for treatment in the fourth quarter, and the lowest rate was observed in the first quarter. One possible explanation for this finding is the New Year's holiday in Vietnam that occurs during the first quarter. Patients usually delay their medical consultation during this period, resulting in reduced admissions. Furthermore, the fourth quarter coincides with winter in the northern region of Vietnam, which may explain the largest number of entries. This result is consistent with other studies that suggest a spike in intensive care

admissions during the winter months.[10] The increase in admissions during this time is often attributed to the higher prevalence of viral diseases, such as influenza, which can significantly impact people with chronic diseases. [11, 12] The relationship between seasonality and ICU admissions should be examined in more detail.

In this research, we found that diseases of the digestive system, injury, poisoning, and certain other consequences of external causes, and circulatory system diseases had the three illness segments with the greatest rates in ICUs. The frequency of digestive disorders in critical care units is congruent with findings from other nations where digestive disorders most frequently cause on emergency room appointments. There were roughly 104 million emergency visits in the US in 2004 with a full diagnosis of digestive disease, compared to about 72 million visits with an initial diagnosis, for an incidence of 35,684 visits per 100,000 US residents.[13] Similarly, studies in Portugal between 2000 and 2010 revealed a rise in the number of emergency hospital admissions for digestive illnesses, especially among older patients, who were treated at higher expenses and had higher mortality rates.[14]

Non-infectious chronic diseases and accidents have increased in Vietnam's provincial hospitals, which is possibly caused by industrialization, contamination of the ecosystem, and population aging.[15] More accidents, especially transportation accidents, result from growing development. Additionally, the prevalence of cancer, chemical toxicity, and food-borne illnesses has been influenced by environmental pollution.[16]

Besides that, serious public health issues include harm, toxicity, and a few other outcomes of external causes, which occupy a significant percentage of ICU patients in our research. The frequency of severe injuries, including those caused by accidents and other injuries, as well as the fast modernization and urbanization, has significantly risen. With about 22.5 fatalities per 100,000 people in 2019,[17] transportation accidents are one of the main sources of injury-related mortality in Vietnam.

In addition, the study shows that the high prevalence of non-communicable diseases, such as cardiovascular disease, made a significant contribution to ICU admissions. This tendency is especially noticeable in elderly groups, where the load of chronic illnesses is greater. According to the World Health Organization, non-communicable illnesses are responsible for more than 70% of all fatalities worldwide.[18] The prevalence of non-communicable diseases has risen quickly in Vietnam over the last few decades, owing to such factors as the elderly population, industrialization, and shifting behaviors. [3, 19]

The decision to analyze emergency department admissions rather than individual patients brings several advantages. This approach allows for a detailed exploration of temporal patterns, peak admission periods, and potential bottlenecks in service utilization. It provides insights into the frequency and distribution of acute cases, enabling a more nuanced understanding of the hospital's response to varying demand levels.

Despite these valuable findings, the research has several limitations. This research was performed in a single location, which may restrict the results' applicability to other contexts. Future research involving numerous locations and employing a prospective strategy may aid in overcoming this constraint. Furthermore, the research did not investigate the effect of co-morbidities on ICU episodes and deaths. Upcoming research should look into the effect of conditions on critical care admission.

Additionally, it's crucial to acknowledge potential limitations, as this method may overemphasize recurrent admissions by certain individuals, potentially skewing the representation of disease prevalence. Furthermore, analyzing admissions alone might not fully capture variations in individual patient experiences, such as differences in severity, comorbidities, or the overall impact of their health conditions. Therefore, a comprehensive understanding of disease patterns and healthcare utilization in the emergency department requires a complementary analysis of individual patient characteristics.

CONCLUSIONS

In summary, this study's analysis provides insight into the illness burden among patients sent to Thanh Hoa General Hospital's critical care units in 2020. The distribution of illness chapters highlighted the prevalence of diseases related to the digestive system, injuries, and circulatory system, collectively constituting over 60% of total admissions. Notably, diseases of the genitourinary and respiratory systems ranked lower, while neoplasms accounted for a modest 2.6%, possibly due to referrals to specialized cancer centers.

This research clarified the connection between mortality, gender, and illness chapter. The main causes of death were circulatory system disorders, including acute myocardial infarction and cardiac arrest. Males had greater mortality rates, and there were discernible age disparities between patients who died and those who survived. The results highlight the need for ongoing monitoring and focused treatments, particularly for illnesses with substantial mortality consequences, to enhance patient outcomes in critical care settings at Thanh Hoa General Hospital.

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REVIEW ARTICLE

BLOCKCHAIN-BASED ELECTRONIC HEALTH RECORDS: REVOLUTIONIZING HEALTHCARE IN MALAYSIA

Fariha Anjum Hira[1], Haliyana Khalid[1], Alam Md Moshiul[2]*

1. Azman Hashim International Business School, Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia
2. Razak Faculty of Technology and Informatics, Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia

Correspondence: hirafa92@gmail.com

ABSTRACT

INTRODUCTION:

Despite the government's continuous efforts since the 1990s, the public healthcare sector of Malaysia still faces issues related to system deployment and technology adoption. As a result, the nationwide health information exchange remains as not fully established, hampering the Malaysian aspirations of health service provision for citizens. The government long to establish health information exchange, enabling blockchain technology-based applications. This paper aims to review the government's digitalization initiatives and describe the provision of blockchain Electronic Health Records for healthcare services in Malaysia.

METHODOLOGY:

A review of the scholarly databases Scopus, Web of Science, and Google Scholar, along with the grey literature from the Malaysian government, was conducted. In addition, health-related government websites have been searched for information until the end of March 2023.

RESULTS:

There were 55 documents yielded from the database, and a grey literature search was retained for content analysis.

DISCUSSION:

The major barrier that could push back governments' efforts is user resistance, particularly from medical professionals. Besides, Regulatory reform is needed to facilitate blockchain provision for healthcare data management. Technical issues directly associated with the system and vendor are worth addressing.

CONCLUSION:

Malaysia has a progressive vision towards healthcare digitalization aimed at 2030. To be able to successfully achieve this target then it is essential to implement appropriate strategies. User readiness assessment calls for research, while system-related issues regarding; hardware, software, and vendor needs to be properly planned. Patients' ownership of medical data is to be allowed by law. Currently this information strictly belongs to hospitals and health partitioners therefore data management is physician centric.

KEYWORDS

blockchain technology, electronic health records, healthcare digitalization, hospital information system; Malaysia.

INTRODUCTION

Malaysia's Ministry of Health (MOH) strives to achieve "A Nation Working Together For Better Health," serving 28 million Malaysians. The MOH administered public healthcare facilities play a significant role, accounting for around 74% of the healthcare service sector share [1] and providing extensive healthcare services to citizens. Hospitals play a crucial role in ensuring quality healthcare delivery. However, the government has been slow in developing robust health information technology (health IT) in general hospital settings, with only 25% coverage for the Hospital Information System (HIS) as of 2023. There is an urgent need for a healthcare system revolution, and users must be ready to embrace new technologies such as blockchain Electronic Health Records (EHR). Therefore, it is essential to acknowledge that a health technology adoption strategy is no longer an option but a necessity for the Malaysian healthcare industry.

The government has set the vision for 2030 to utilize blockchain technology to streamline medical data management in the public healthcare sector. However, the overall understanding of issues associated with the digital revolution in the health industry is marginal and dispersed from review of the present literature. Particularly, more research on blockchain technology's healthcare application in Malaysia has been urged by Anjum et al. [2]. Therefore, this study aims to answer the questions; (a) what is the health IT initiative undertaken, and what is the HIS status quo in Malaysian general hospitals? (b) how is blockchain EHR linked to the digital economy blueprint 2030, and what benefit can it bring regarding healthcare service delivery? (c) why rethinking about the regulatory framework and end users' preparedness is required to move forward?

The findings of this study are helpful for policymakers and researchers to grasp the complexity of deploying blockchain EHR in the Malaysian healthcare industry. Besides, to realize the importance of human factors and policy reform as the prerequisite of project success hence can design and develop the system deployment strategies accordingly.

The remainder of this article is as follows; the subsequent section presents the study's methodology. Next is the chronological representation of the health IT initiative, followed by the HIS status quo. The adjacent section illustrates the link of blockchain EHR with Malaysia's digital economy blueprint for 2030 and healthcare service delivery. Following these are the need to rethink policy measures and end users' preparedness in moving forward. The study then concludes by highlighting the study's contribution, limitations, and future research direction.

METHODS

A narrative literature review method was used to undertake this study. A review of scientific databases (Scopus, Web of Science, Google Scholar), medical related electronic databases, Malaysia Government and MOH websites, World Health Organization (WHO), and the World Bank publication on Malaysia from the websites. The literature review was conducted by following the PRISMA protocol for guidance (as illustrated in Figure 1) following the pattern of Anjum et al. [2]. The literature search included terms related to healthcare digitalization on telemedicine flagship project under Multimedia Super Corridor (MSC), Electronic Medical Record (EMR), EHR, HIS, and cloud computing in Malaysia which yielded 153 documents. After screening, 55 papers met the inclusion criteria and were retained for content analysis.

FINDINGS: HEALTH IT DIGITALIZATION INITIATIVES AND THE STATUS QUO OF HIS

In the 1990s, the Malaysian Government, through MOH, initiated several health IT projects. In 1991, the government introduced Vision 2020 [2, 3], which identified health IT as a critical component of the plan. The HIS initiative began to take shape during the Sixth Malaysian Plan (MP) [4] from 1990 to 1995, and in 1993, Hospital Selayang became the first hospital in the country to implement HIS. The telehealth project was launched on August 1st, 1996. The Seventh MP [3] (1996-2000) aimed to establish 33 IT hospitals, including eight HIS hospitals and 25 intermediate and basic HIS hospitals [3,4].

However, due to the economic crisis in 1998, the Government could not meet its targets. Despite the setback, the Government remained committed to achieving its goals during the Eighth MP [3]. However, only two hospitals became IT hospitals by the Ninth MP (2006-2010) [3], and the rest remained on hold. Since 2018, the Government has focused on revitalizing the three-decades-old healthcare reform projects under MSC to enhance the use of technology in public healthcare facilities [5]. These initiatives include reviving the "Telemedicine Blueprint 1997 [3]," which proposes the

implementation of a Lifetime Health Record (LHR), Personalized Lifetime Health Plan (PLHP), Continuing Professional Development (CPD), teleconsultation, and online health services [6].

In 2018, the former Health Minister introduced the Electronic Medical Record (EMR) implementation plan for 2018-2023. The goal was to ensure that medical data and EMRs could be shared across healthcare facilities, including clinics, hospitals, and post-care practitioners [7]. This plan aimed to establish EHR in all public healthcare facilities to achieve nationwide coverage. Table 1 presents the government's healthcare facility-focused digitization initiatives chronologically [6, 8, 9].

FIGURE 1. PRISMA LITERATURE SEARCH

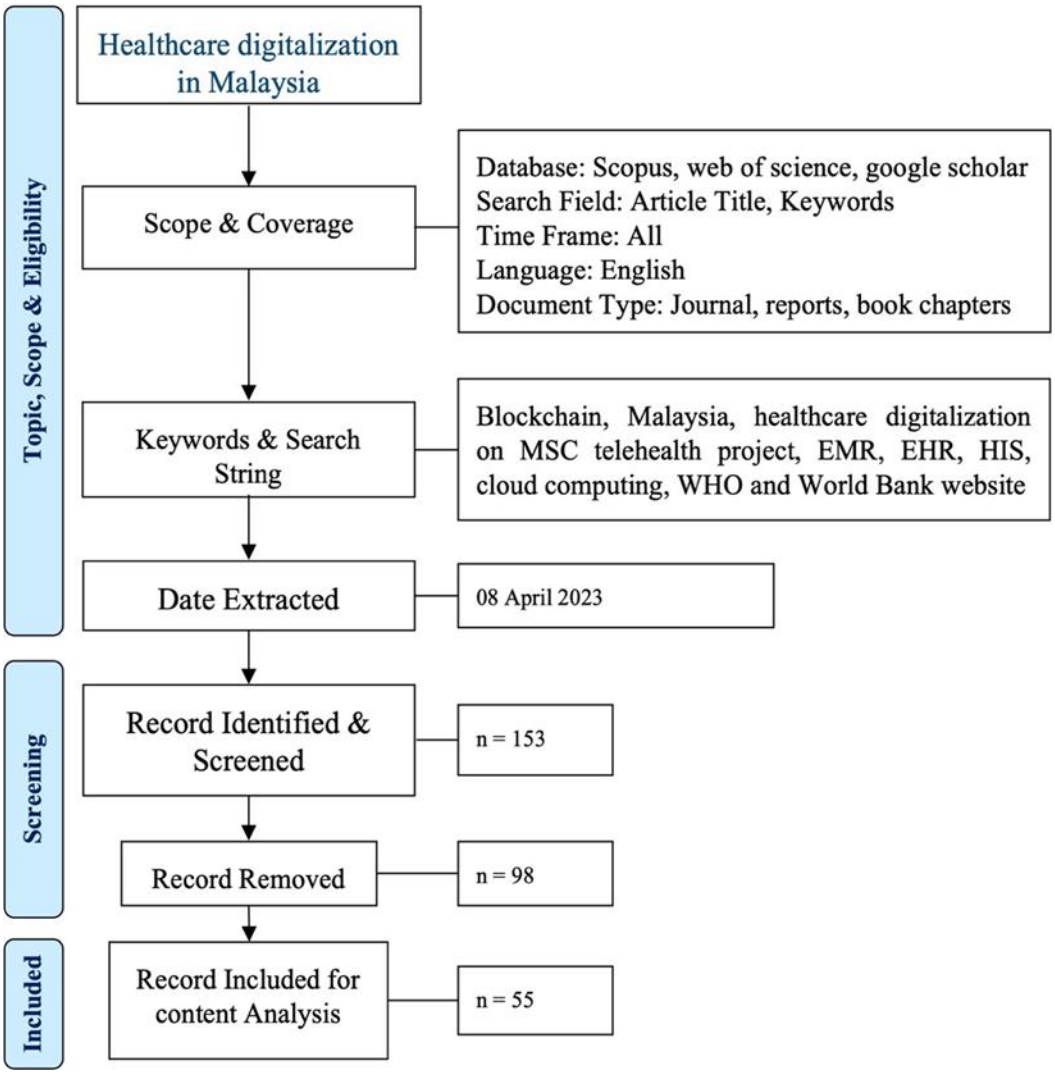


TABLE 1. PUBLIC HEALTHCARE SERVICE DIGITALIZATION INITIATIVES IN MALAYSIA

Timeline	Initiative/description
5th MP (1985-1990)	Computerization was introduced for efficient billing systems at selected hospitals.
6th MP (1991-1995)	Computerized health MIS for non-clinical functions, i.e., patient administration, budgeting, and performance supervising.
7th MP (1996-2000)	Widening the use of IT for patient care management and telemedicine.
	Videoconference system trial from 2 tertiary hospitals for remote patient monitoring,
	Deploying the MSC-telehealth flagship project.
	Development of a telemedicine roadmap and guidelines.

	The Telemedicine Act (1997) was enacted to govern clinical practice utilizing telecommunication systems for addressing client confidentiality and authorization issues.
	Setting up of Telehealth Unit, MOH.
	Development of the National Telehealth Policies
	Contracting signing finalized for Pilot Project of Telehealth
	Phase I: telehealth project completion: MCPHIE, CME, LHP
	Deployment of Teleconsultation at 41 sites
	Hospital Selayang and Putrajaya enabled THIS operational in 2000
	THIS is in tertiary hospitals such as Ampang, Sungai Buloh, and Serdang. BHIS/IHIS in district hospitals such as hospitals Lahad Datu & Kepala Batas
	Tele-primary care in selected Health Clinics
	Proposal for THIS in Shah Alam, Cheras Rehabilitation Hospital
8th MP (2001-2005)	Telemedicine at the Kajang and Seremban Hospitals as well as its neighbouring facilities.
	Deployment of disease and clinical database (i.e., cancer, cataract, neonatal)
	Completion of Telecommunication Pilot Project
	Launching MyHealth portal (replacing non-operational MCPHIE services)
9th MP (2006-2010)	Tele-primary care launch in Johore & Sarawak in 41 sites
	Upgrading HIMS between national, state and district health offices
	Re-activation of Teleconsultation services
	Upgrading of electronic disease surveillance registries
	Management Information System Blueprint
	Revision of Telehealth strategies into seven components: LHR, LHP, CPD, PLHP, MPHIE, Teleconsultation, call centre/CRM, Group Data Service
	Piloting LHR and PLHP, emphasizing interpretability and integration between healthcare providers seamlessly
	Pilot project for Malaysia Health Information Exchange (MyHIX) in 2009
	Tele-primary care expansion
10th MP (2010-2015)	Utilization of tele-primary care in regional locations
2018 onwards	All public hospitals will have EMRs with 5G technology and EHRs by 2023
	Re-emphasis on MSC: LHR, PLHP, CPD, teleconsultation, health online
	In 2020, 25% (35) of the 145 public hospitals were IT hospitals
	In 2018, there were 21 IT hospitals out of 138 total public hospitals
	EMR at all public healthcare facilities by 2023 (including 145 general hospitals).
	EHRs will be integrated via MyHIX for the "Master Patient Index" and LHR
	Blockchain for medical data management by 2030 in public healthcare facilities

Abbreviations: Basic Hospital Information System (BHIS); Customer Relation Management (CRM); Lifetime Health Plan (LHP); Mass Customised Personalised Health Information and Education (MPHIE); Intermediate Hospital Information System (IHIS); Management Information System (MIS); Malaysian Plan (MP); Total Hospital Information System (THIS)

There are two sorts of public hospitals in the country: IT hospitals and non-IT hospitals. Non-IT hospitals lack information systems. Only 35 public hospitals have three levels of HIS; a total, intermediate, or basic HIS (Table 2). Tertiary hospitals with a capacity of over 400 beds have THIS. IHIS hospitals are those with 200 to 400 beds. BHIS hospitals have fewer than 200 beds. HIS components of THIS hospital covers all the hospital's departments, having EHRs. Currently, there are 12 THESE hospitals in Malaysia. BHIS and IHIS all departments' systems are not integrated and have a hybrid (both IS and paper-based) data management.

TABLE 2. DIFFERENCE BETWEEN THIS, IHIS AND BHIS HOSPITALS

Indicators	*THIS*	*IHIS*	*BHIS*
	12 Hospitals	23 Hospitals	
EHR component coverage	Complete	Partial	Partial
Data management	Paperless	Hybrid	Hybrid
Capacity (number of beds)	>400	200~400	<200
Tertiary Hospital	Yes	No	No

Abbreviations used are explained at Table 1

In November 2018, the Malaysian Government announced its intentions to introduce EHRs in all public hospitals by 2023, integrating them into a unified system known as MyHIX to generate a "Master Patient Index" and LHR. As of February 2023, this initiative has not been updated. According to available data, as of 2018, only 21 out of 138 public hospitals were equipped with IT infrastructure, and by 2020, only 25% or 35 of the 145 public hospitals had implemented IT systems. Despite some progress, this represents a considerable distance from achieving nationwide EHR coverage.

DIGITAL ECONOMY BLUEPRINT AND BLOCKCHAIN EHR

Blockchain is a P2P (peer-to-peer) distributed ledger containing a network of affiliates called nodes [10]. Malaysia's digital economy strategy includes integrating blockchain technology as the underlying mechanism for EHRs to streamline medical records. Phases one and two of the integration are set to be completed by 2025, with phase three scheduled for 2030. The integration of blockchain with the Malaysian Health Data Warehouse (MyHDW) is planned for 2023 since it does not hold any health-related patient information; therefore, it is irrelevant to this study.

In order to deliver the highest quality patient-centred care, public hospitals need EHRs that can generate LHR beginning at birth. In addition, data must be protected by ensuring confidentiality, and anonymity; possess a single version of the truth; have zero downtime; be accessible to approved key players (such as insurers, physicians, or advocacy groups); possess immutable integrity; be accessible in real-time and anywhere (outside the home environment); and be ubiquitous. These features are absent from EHRs as they now exist. By facilitating data protection, transparency, provenance, traceability, immutability, audit, flexible access, confidentiality, and dependability, blockchain EHR can meet the requirements of an ideal EHR [11,12].

In 2016, health technology scientists found blockchain could be a supporting tool [2]. Blockchain technologies' use cases in healthcare clarify that it is not hype but hope. The blockchain enabled app, "The Immunity Health Passport"[13], is the first initiative in the county to exchange COVID-19 vaccination certificates for Malaysian travellers to Singapore as an exchange of health information. The Government plans to integrate blockchain with EHRs by 2030, aiming to achieve nationwide health information exchange (NHIE). Blockchain EHR benefits include;

A. It is possible to develop a seamless HIE between medical institutions. Blockchain could enhance EHR efficiency. Thus, nationwide MyHIX coverage can be achieved. MyHIX is the Malaysian Health Information Exchange [13]. MyHIX has been an EHR integration engine for HIE since November 2008 [14]. It allows connected healthcare facilities to exchange health information in the form of discharge summaries via an online virtual private network. The nationwide coverage of MyHIX will enable caregivers to access patients' medical records, thereby improving the quality of care. However, the EMR implementation and development of LHR are not yet established in line with the Government's target to achieve nationwide MyHIX coverage. To address this, the Government has undertaken the EMR implementation project to include all 145 public hospitals, but only ten hospitals and one clinic have been integrated. One of the primary reasons for the low number of healthcare facility integrations is the inefficiency of traditional EHR. Therefore, blockchain EHR can improve efficiency and support the establishment of nationwide MyHIX network coverage [13,15].

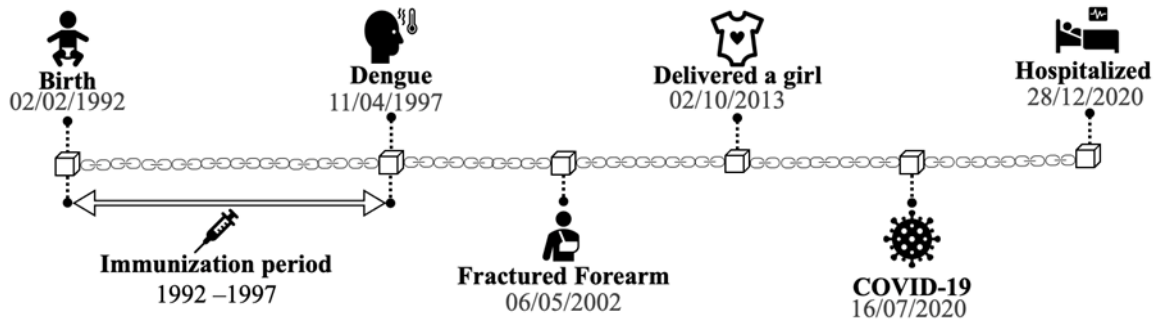
B. Patient control of their medical information can provide the caregiver with immediate access to the

data during the visit. As a result, care providers can plan informed treatment decisions personalized to each patient's needs, thus potentially mitigating the risk of medical errors.

C. The decentralized information-sharing mechanism of blockchain EHR eliminates the requirement for third-party engagement, minimizing a data breach risk.

D. This can aid the ambitious objective of "one patient, one record." Blockchain EHR can store patient information chronologically and create a chain of patient information. As the name implies, Lifetime Health Record summarizes an individual's health records throughout their life, beginning with the first use and continuing until the individual visits their healthcare provider. The concept of LHR represents a patient's life-long medical information at the point of care with reports from various facilities of healthcare settings where s/he is involved in medical care. It contains all the patient's medical information in chronological form since birth and can be facilitated through blockchain EHR. For instance, based on the idea derived from Leeming, Cunningham, and Ainsworth [16], Figure 2 presents an LHR of a woman created using blockchain EHR from birth in 1992 to death in 2020. A single patient's entire medical history is added as blocks during the patient's full lifetime, which is an LHR, thus forming "1 patient, 1 record."

FIGURE 2. A PATIENTS' LIFETIME HEALTH RECORD BLOCKCHAIN EHR



This LHR contains all medical information, such as medications, previous treatments, and disease background. If the LHR is accessible, high-risk patients, such as cancer and asthma patients, could be recognized without additional investigation. It is extremely important during infectious disease outbreaks such as COVID-19. During such a public health emergency, a well-positioned distributed HIE mechanism can facilitate decisive treatment decisions.

RETHINKING REGULATORY FRAMEWORK AND END USERS' PERCEPTION AND READINESS TOWARDS BLOCKCHAIN EHRS

Malaysia's health IT users (medical professionals and patients) are not technology ready. The unfreezing of medical professionals from the current state to prepare them to accept change in organizational settings has traditionally been identified as a major barrier. Change management strategy at the pre-implementation stage is of utmost importance. The resistance issue in every step of technology deployment needs assessment and strict continuous monitoring.

Additionally, the low adoption of health IT in public hospitals, partly due to professionals' reluctance to change from legacy systems, makes it critical to engage in a change management process that includes "unfreezing" the mindset of users to deploy health IT successfully.

Furthermore, policy implications must be reconsidered to prepare users for adopting blockchain EHRs, particularly concerning regulatory reforms allowing users to own their medical data. These are crucial areas that require policymakers' attention to ensure the successful adoption and implementation of blockchain EHRs in the Malaysian healthcare system.

Regulatory reform to facilitate exchangeable EHR. In THIS hospitals, the EHR data gets exchanged within the hospital. Due to data sensitivity, the Malaysian Medical Council imposed strict legislative complacency. Hence, the

country's public hospitals have deployed non-shareable EHRs managed by single or multiple approved care providers only. In non-sharable EHR, data cannot be exchanged outside the designated healthcare facility [7,17]. The restrictions are due to the concern of data breaches. Blockchain EHR allows patients access to their data, which contradicts policy as medical professionals and hospitals own the data by law. Such a law requires revision and amendment to facilitate blockchain EHR.

CONCLUSION

This contribution of this study is to provide a clear picture of the state-of-the-art technology initiatives and how endusers and regulatory mandates could potentially hinder the successful deployment of blockchain EHR in revolutionizing healthcare in Malaysia. The study is strictly limited in answering the research questions; future studies are encouraged to detail the issues outlined.

The potential advantages of blockchain technology are immense. However, utilizing it as an innovative method to integrate EHRs nationwide and programmatically manage typical medical issues can improve patient outcomes, medical experiences, and individuals' overall health and well-being [18]. As the EHRs are an initiative of the MOH, THIS hospitals would have been the most worthy candidates to revolutionize their EHRs to blockchain EHRs, allowing them to enjoy the advantages of Blockchain EHRs over traditional EHRs. The MOH initiated LHR under the MSC so that every individual would have one patient and one record. Sadly, the project was terminated in 1997. EHR based on blockchain technology can improve efficiency, eliminate the pitfalls of the current EHR, and facilitate the LHR and national health information exchange. MyHIX. To fulfil that target, blockchain EHR is needed. The study is anticipated to direct government hospital policymakers' decision-making and strategic planning processes for a safe and resilient health information exchange in the country.

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REVIEW ARTICLE

MY VOICE, MY CHOICE: A SYSTEMATIC REVIEW OF THE LITERATURE RELATING TO CONSUMER-DIRECTED CARE IN AUSTRALIA

Jennifer Kosiol[*1], *Richard Olley*[2], *Sheree Lloyd*[3], *Linda Fraser*[1], *Helen Cooper*[1], *Daniel Waid*[1]

1. Health Services Management, Griffith University, Brisbane, Queensland.
2. School of Medicine & Dentistry, Griffith University, Brisbane, Queensland.
3. Australian Institute of Health Services Management, College of Business and Economics, University of Tasmania.

Correspondence: j.kosiol@griffith.edu.au

ABSTRACT

OBJECTIVES AND IMPORTANCE OF STUDY

The objective of this systematic review of the literature was to examine the evidence relating to consumer-directed care (CDC) in the aged care environment. CDC entails providing individuals with the option of choice and flexibility in their care, to empower aged care recipients with autonomous decisions over their healthcare choices. Additionally, the researchers found evidence relating to the vulnerability of users of aged care services and the lack of understanding towards a true consumer-oriented approach which was highlighted during the Royal Commission into Aged Care Safety and Quality.

STUDY TYPE AND METHOD

The research team used the PRISMA Method to review the available literature systematically. This qualitative review of the literature on consumer choice in the aged and social care sectors assessed sixteen high-quality research papers and identified themes that emerged to promote authentic consumer voice in aged care services. These articles provided insight into what aged care providers require to increase transparency and facilitate effective, meaningful consumer choice.

RESULTS

Six themes emerged from the literature reviewed: Informed Choice, See Me Hear Me, Funding My Choices, My Choice My Way, Policy, and Know Me, Include Me. The authors found significant challenges to authentic consumer voice in terms of reliable information, complex, inflexible service provision, and a trusted and skilled carer workforce.

CONCLUSION

Authentic consumer choice requires collaboratively designed care plans with consumers, integrating their care-related preferences and values. Providers who have embraced CDC principles, and innovative practices have enhanced person-centred care, and consumer experience and autonomy. Cultivating inclusive, transparent, and collaborative environments to empower older Australians to shape and control their care provision and wellbeing is a key challenge for providers.

KEYWORDS

Aged care; consumer directed care; consumer voice; consumer choice

INTRODUCTION AND BACKGROUND

Consumer Directed Care (CDC) is defined by the Council on the Ageing (COTA) as a way of delivering care that seeks to provide individuals choice and flexibility to aged care consumers [1]. In Australia, CDC began with an initial pilot program during 2011-12 as part of the Commonwealth aged care reform process *'Living Longer, Living Better'* package. As a Federal Government policy, it was legislated via the Aged Care (*Living Longer Living Better*) Bill after it was announced on 20 April 2013. The initial pilot program in 2011-12 was part of the Commonwealth Government's aged care reforms initiated over the previous two decades [2]. The aged care CDC policy signalled a move from a service provider focus to a more consumer-oriented approach.

The CDC policy adopted in Australia was intended to change from a provider-based model towards a consumer-centric one and followed similar models applied in the United Kingdom, Sweden, Canada, and the United States of America [2]. Before CDC, older people had to adhere to a pre-determined range of services, which were inflexible and often failed to meet individual needs 3. CDC's core principle is to cater to each older person's unique needs and preferences, ensuring personalised care [2].

There are six principles underpinning CDC: consumer choice and control, rights, respectful and balanced partnerships, participation, wellness and reablement, and transparency [1]. A primary benefit that proponents of CDC in the Australian aged care system assert is that it allows for greater flexibility in delivering aged care services allowing the older person, or their representative, to organise services that are provided at a time and date convenient to them [4]. The care recipient, or their authorised representative, can also choose the provider they prefer, the type of service they require, and tailor their care plan to the specific circumstances [4].

The government and other proponents of CDC posit that a significant advantage of CDC is that it promotes greater accountability and transparency [2, 5]. As the individual and their caregiver are empowered to take greater control of the care they receive, there is an increased responsibility to ensure that the services provided are of a high standard. This is achieved through a partnership with the service provider, where they are held accountable for delivering the agreed services promptly and professionally [4].

One of the challenges of CDC is ensuring that the individual or their caregivers have the necessary knowledge and skills to manage their care plan effectively [6]. This knowledge gap must be addressed through adequate training and support of all categories of aged care workers in residential and community-based aged care services. Such training will equip them with the essential tools to navigate the inherent complexities of the aged care sector [6].

Additionally, for CDC to work as designed, the government and providers must work together to guarantee sufficient information and resources for the individual and their caregiver to make informed decisions [5, 7]. Thus, CDC extends the opportunity for greater practicality, transparency, and flexibility in service delivery. However, this is dependent on reliable information [8]. Notwithstanding, the information imbalance remains a major barrier to the effective implementation of CDC 7. The success of CDC depends on the older person or caregiver having the necessary knowledge and support to manage their care plan effectively [8]. The authors of this systematic literature review became aware of the limited research examining consumer or worker perspectives on CDC [6, 9].

Relevant literature refers to the barriers to implementing CDC [2, 9, 10]. The authors define barriers in this paper as the obstacles that prevent CDC from being executed or limiting how it can be implemented in the aged care context. Moreover, the authors perceive barriers to CDC in aged care as ubiquitous and comprised of those factors that hinder the implementation process and reduce the probability of success. Conversely, facilitators bring about an outcome by aiding consumer choice and providing guidance or supervision [11].

This systematic literature review explores high-quality research examining the barriers and facilitators to implementing CDC in Australian aged care services provided in residential or community-based care services.

LITERATURE REVIEW

Historically, the consumer's voice has played little part in determining and developing policies and care delivery in the aged care sector. Beyond the choice given to many consumers regarding consent for care, care is usually passively accepted by consumers with little to no say in the care delivery. One study into residential aged care found

that consumers did not feel they were included in decision-making, had difficulty maintaining autonomy and dignity, and willingly traded such levels of independence for the assistance and safety offered in care [12]. Additionally, the regulatory requirements and their interpretation by aged care providers influence the delivery of care and services offered. The literature reports minimal attempts to include a consumer voice in determining levels of care required, how care is delivered and by whom, when care is delivered, and many other choices presented as a fait accompli to the recipients of such care [12].

In July 2019, the Australian government released a new set of Aged Care Quality Standards [13] that outlined a range of best practice strategies and tools for aged care providers to engage with consumers and their representatives. The standards set out the importance of positioning consumers at the centre of care planning, delivery, and review, shifting the traditional focus from provider processes to quality outcomes for consumers. Following the Royal Commission into Aged Care Safety and Quality, the final report published in 2021 [14] determined that ensuring choice, control, and involvement in decision-making, promotes dignity in the aged care community. UNICEF and WHO assert that all people have the right to participate individually and with support of their care provider in the planning and implementation of their care [15]. There appears to be no better time to ensure the aged care community is not forgotten in the voice and choice offered to consumers.

Whilst there are many barriers to inclusion in the provision of aged care, the literature reports that concentrated efforts are needed to improve consumer voice, choice, control, and involvement in planning care. Researchers, Parkinson and Radford [16] concluded that further and continued research is required to ensure that Australia provides control and independence in CDC.

For this review, a team was formed to explore the barriers and facilitators of implementing CDC in Australian residential or community-based aged care settings. We examined the literature to determine what evidence-based strategies promote authentic consumer voice in aged care and how the consumer's voice is facilitated.

METHOD

DESIGN

This systematic literature review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [17] and the required PRISMA checklist guided the review and reporting process. The authors used a computer-based application (Covidence) to support the organisation, extraction and review of articles returned from the search strings. The researchers screened titles and abstracts and undertook a quality review of included articles to generate the PRISMA flow sheet (see Figure 1).

SEARCH STRATEGY

A comprehensive search was conducted using the Griffith University Library search engine and databases that included PubMed, ProQuest, Web of Science, Scopus and CINHAL.

The researchers searched studies published from 01/01/2018 to 18/03/2023. Search strings used included a combination of keywords using Boolean operators and truncation (*) where necessary. The following keyword combinations were used as search strings across the databases in Table 1 below:

TABLE 1- SEARCH STRINGS BY DATABASE

No.	Search String	Database
11	TX ([Aged Care] OR [Resident* Care] OR [Elder Care]) AND ([Consumer Voice] OR [Consumer Directed Care])	CINAHL
22	TITLE-ABS-KEY (aged AND care] OR [Resident* AND care] OR [elder AND care] AND [consumer AND voice] OR [consumer AND directed AND care])	Scopus
33	[Aged Care] OR [Resident* Care] OR [Elder Care] AND [Consumer Voice] OR [Consumer Directed Care] And [Aged Care] OR [Resident* Care] OR [Elder Care] AND [Consumer Voice] OR [Consumer Directed Care] AND [Consumer Representation	PubMed

No.	Search String	Database
	And [Resident*] AND [Consumer Voice] AND [Consumer Directed Care] And [Aged] AND [Consumer Voice] AND [Consumer Directed Care]	
44	[Aged Care] OR [Resident* Care] OR [Elder Care] AND [Consumer Voice] OR [Consumer Directed Care] And [Aged Care] OR [Resident* Care] OR [Elder Care] AND [Consumer Voice] OR [Consumer Directed Care] AND [Consumer Representation And [Resident*] AND [Consumer Voice] AND [Consumer Directed Care] And [Aged] AND [Consumer Voice] AND [Consumer Directed Care]	ProQuest
55	[Aged Care] OR [Resident* Care] OR [Elder Care] AND [Consumer Voice] OR [Consumer Directed Care] And [Aged Care] OR [Resident* Care] OR [Elder Care] AND [Consumer Voice] OR [Consumer Directed Care] AND [Consumer Representation And [Resident*] AND [Consumer Voice] AND [Consumer Directed Care] And [Aged] AND [Consumer Voice] AND [Consumer Directed Care]	Web of Science

ELIGIBILITY CRITERIA

The inclusion criteria for the literature review were studies published in English between 2018-2023 and detailed above. Articles were excluded if they were existing systematic reviews of the literature, written in languages other than English, did not address the research question posed or did not meet the quality assessment as measured using the Mixed Methods Assessment Tool (MMAT) [18].

STUDY SELECTION

Titles and abstracts were screened independently by teams of two reviewers to identify studies that met eligibility criteria. Full-text articles that met the inclusion criteria were further reviewed by all team members as detailed in the Results section.

QUALITY ASSESSMENT

The MMAT is a tool that is designed for the critical appraisal stage of mixed methods study reviews [18]. The researchers chose the MMAT quality assessment tool because it supports the appraisal of five study categories: the methodological quality of qualitative research, randomized controlled trials, non-randomized studies, quantitative descriptive studies, and mixed methods studies. Not all these categories were represented in the included studies. However, the identified studies were of a type that made the MMAT suitable for a quality assessment of the papers.

DATA EXTRACTION

The following information was extracted from each paper: author, year, country, study name, an overview of the CDC intervention characteristics, aged care setting, outcomes measured, and strategies that facilitate CDC. All reviewers independently assessed the extracted data, and disagreements were resolved through discussion until consensus was achieved.

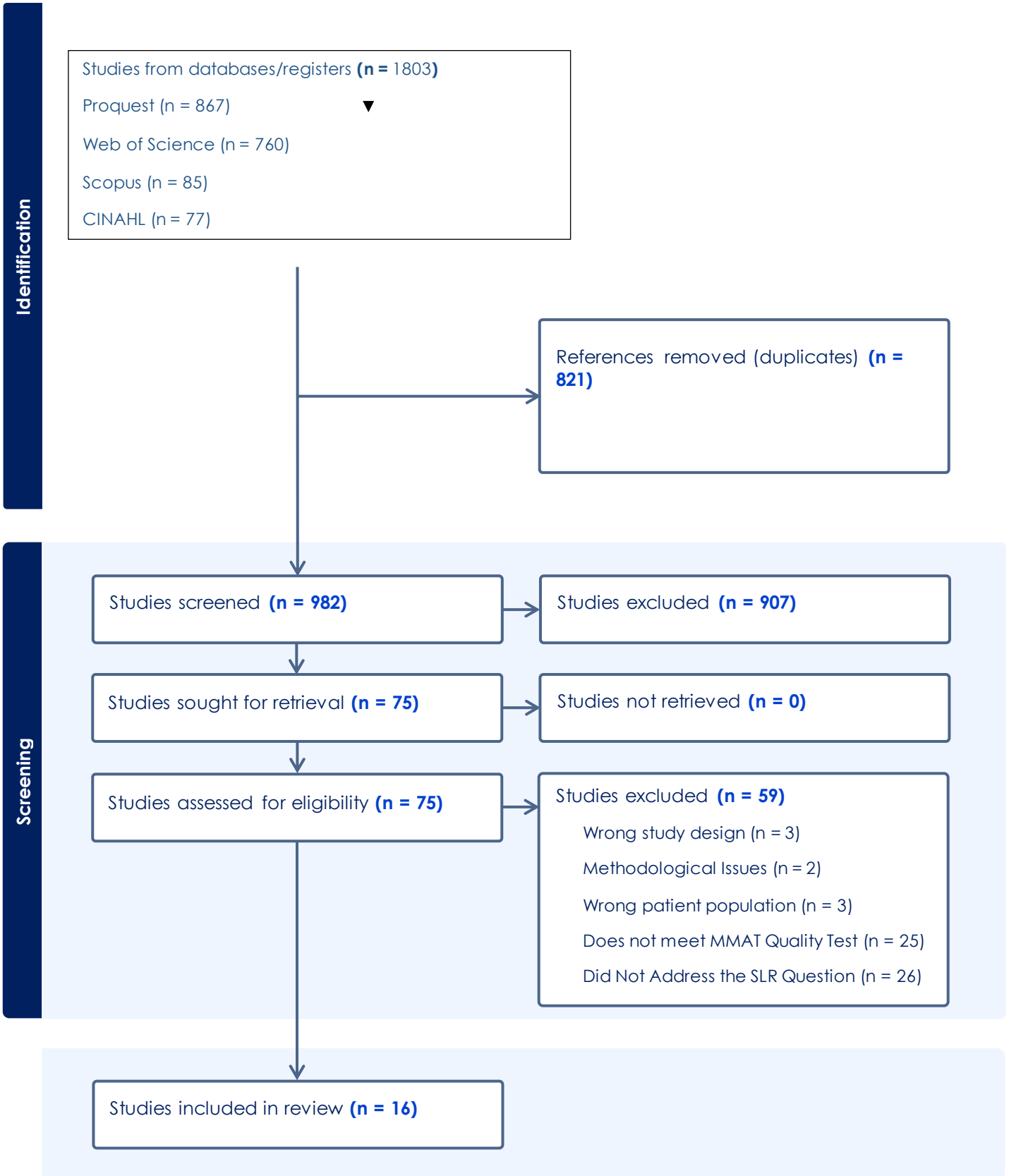
DATA ANALYSIS

Key themes were derived from the extracted data by identifying common themes and concepts across the literature using a thematic analysis recommended by Clarke and Braun 19. Findings were aligned with the objectives and research questions of the systematic literature review.

RESULTS

This search identified 1803 articles, of which 75 underwent full-text screening, 59 were excluded following quality assessment with the MMAT tool described above leaving a total of 16 articles eligible for review. See Figure. 1 for the study selection process.

FIGURE 1: STUDY SELECTION PROCESS REPRESENTED IN A PRISMA FLOWCHART 20



STUDY DESIGN AND LOCATION

Included studies were conducted in several countries, Australia (n=13), United Kingdom (n=2) and Sweden (n=1). Table 1. below shows the included papers, location of the study, method, and the themes identified.

TABLE 1: ARTICLES INCLUDED, KEY THEMES AND CHARACTERISTICS

Author(s)	Titles	Location of Study	Purpose of the study and relevance of its contribution	Research methods	Study Design	Themes
Bennett, M., von Treuer, K., McCabe, M. P., Beattie, E., Karantzas, G., Mellor, D., Sanders, K., Busija, L., Goodenough, B., & Byers, J.	Resident perceptions of opportunity for communication and contribution to care planning in residential aged care.	Australia	The study aimed to explore residents' perceptions of the opportunities they must communicate, including the opportunity to express their care preferences and contribute opinions about their care.	Qualitative	Qualitative research	Informed Choice See Me Hear Me My Choice, My Way Know Me, Include Me Finding The Person in The Policy
Chapman, A.	Person-centred care in Northern Ireland: learning from the experiences of adult social care users.	United Kingdom	The study aimed to explore how a person-centred approach could potentially work for older adults in Northern Ireland	Qualitative	Qualitative research	Informed Choice See Me Hear Me Funding My Choices My Choice, My Way Know Me, Include Me Finding The Person in The Policy
Day, J., Thorington Taylor, A. C., Hunter, S., Summons, P., van der Riet, P., Harris, M., Maguire, J., Dilworth, S., Jeong,	Experiences of older people following the introduction of consumer-directed care to home care packages: A qualitative descriptive study.	Australia	To explore the experiences of older people receiving home care package (HCP) support following the introduction of CDC by the Australian government on 1 July 2015	Qualitative	Other: Qualitative and paper survey	Informed Choice See Me Hear Me Funding My Choices Finding The Person in The Policy

Author(s)	Titles	Location of Study	Purpose of the study and relevance of its contribution	Research methods	Study Design	Themes
S., Bellchambers, H., Haydon, G., & Higgins, I.						
Duner, A., Balkebring, P., & Johansson, B. O. O.	Merely a rhetorical promise? Older users' opportunities for choice and control in Swedish individualised home care services.	Sweden	The study aims to investigate how older users of home care services view and experience their opportunities of exerting influence and having choice and control in their everyday living in terms of receiving preferred services that are flexible and responsive to their actual needs and priorities.	Mixed methods	Other: Mixed methods with a cross-sectional study.	Informed Choice See Me Hear Me Funding My Choices My Choice, My Way
Gill, L., Bradley, S. L., Cameron, I. D., & Ratcliffe, J.	How do clients in Australia experience Consumer Directed Care?	Australia	Explores client experience of Australian Consumer Directed Care (CDC).	Qualitative	Other: Semi-structured in-depth interviews	Informed Choice See Me Hear Me Know Me, Include Me Finding The Person in The Policy
Hillcoat-Nalletamby, S.	'Pathways to choice' of care setting.	United Kingdom	The study aims to encourage critical reflection about the limitations of the rational choice approach as an explanatory insight into understanding older people€™s choice-making about their health or social care requirements. The RQs are not clearly stated in the article.	Mixed methods	Qualitative research	Informed Choice See Me Hear Me Funding My Choices Know Me, Include Me Finding The Person in The Policy

Author(s)	Titles	Location of Study	Purpose of the study and relevance of its contribution	Research methods	Study Design	Themes
Kalaitzidis, E., & Harrington, A.	Resident decision-making in the context of residential aged care.	Australia	To explore residents' views across 4 RACFs in Adelaide regarding decision-making, choice, and control in the context of a RACF.	Qualitative	Qualitative research	Informed Choice Funding My Choices Finding The Person in The Policy
Laragy, C., & Vasiliadis, S. D.	Consumer expectations of self-managing aged home care packages in Australia.	Australia	uses empowerment theory (Hur,2006) to understand consumers' perceptions of self-managing COTA Australia Trial. To better understand older people's motivations for wanting to self-manage their home aged care package, this study addressed the following research questions: (a) why did consumers, or their informal carer on their behalf, volunteer to participate in the self-managing trial; (b) what their expected outcomes (c) were and what were their attitudes towards risk	Mixed methods	Other: Cross-sectional study. Interviews	Informed Choice See Me Hear Me Funding My Choices Know Me, Include Me Finding The Person in The Policy
Laragy, C., & Vasiliadis, S. D.	Self-managed aged home care in Australia - Insights from older people, family carers and service providers.	Australia	Evaluation of an Australian trial of self-managed home aged care. Advocacy organisation COTA consumers and service providers codesigned the self-management model. Primary aim of the evaluation	Mixed methods	Other: Cohort study. Surveys and semi-structured interviews.	Informed Choice See Me Hear Me Funding My Choices

Author(s)	Titles	Location of Study	Purpose of the study and relevance of its contribution	Research methods	Study Design	Themes
			was to examine whether self-management improved consumers' perceptions of their choice, control, and wellbeing.			
Laver, K., Gnanamanickam, E., Whitehead, C., Kurrle, S., Corlis, M., Ratcliffe, J., Shulver, W., & Crotty, M.	Introducing consumer-directed care in residential care settings for older people in Australia: views of a citizens' jury.	Australia	To explore strategies that increase personal decision-making for people in residential care using a Citizens' Jury.	Mixed methods	Other: Market research company collected quant data, but the main study findings were based on qualitative data provided by the citizen's jury.	Informed Choice See Me Hear Me Funding My Choices My Choice, My Way Finding The Person in The Policy
Monro, C., Mackenzie, L., O'Loughlin, K., Low, L. F., & Du Toit, S. H. J.	'I could no longer cope at home': Experiences of clients and families in residential aged care within the context of Australia's aged care reforms.	Australia	To document the experiences of clients and their families in residential aged care within the Consumer Directed Care policies operating. This study explored the lived experiences of clients and families in RACFs amid the reform implementation process.	Qualitative	Qualitative research	Informed Choice See Me Hear Me Funding My Choices My Choice, My Way Finding The Person in The Policy

Author(s)	Titles	Location of Study	Purpose of the study and relevance of its contribution	Research methods	Study Design	Themes
Ogrin, R., Meyer, C., Appannah, A., McMillan, S., & Browning, C.	The inter-relationship of diversity principles for the enhanced participation of older people in their care: a qualitative study.	Australia	The health and aged care workforce must understand and support the diverse needs of older people. to enhance their care experience. We previously identified five principles of diversity training for this workforce: awareness of unconscious bias and prejudice; promotion of inclusion; access and equity; appropriate engagement; and intersectionality. This study aims to explore how these principles are considered from the perspectives of older Australians.	Qualitative	Qualitative research	Informed Choice See Me Hear Me Funding my Choices My Choice, My Way Know Me, Include Me, Finding The Person in The Policy
Petriwskyj, A., Gibson, A., & Webby, G.	What does client 'engagement' mean in aged care? An analysis of practice.	Australia	Understandings and practices of engagement within one large aged-care organisation, considering the perspective of both staff and clients. Implications that these have for power relationships and older people's influence.	Qualitative	Other: Qualitative research. Semi-structured individual interviews and focus groups.	Informed Choice See Me Hear Me My Choice, My Way Know Me, Include Me
Rahja, M., Laver, K., Phillipson, L.,	The decision-making processes and preferences of older Australians purchasing home	Australia	To understand the decision-making processes and spending preferences of	Qualitative	Other: Think aloud technique	Informed Choice See Me Hear Me

Author(s)	Titles	Location of Study	Purpose of the study and relevance of its contribution	Research methods	Study Design	Themes
Comans, T., & Crotty, M.	support services: An explorative inquiry using a "think-aloud" technique.		community-dwelling seniors assessed eligible for CDC home care services			Funding My Choices My Choice, My Way Know Me, Include Me
Russell, S. J., Siostrom, K., Edwards, I., & Srikanth, V.	Consumer experiences of home care packages.	Australia	The study aimed to explore consumers' experiences of receiving a home care package (HCP).	Qualitative	Qualitative research	Informed Choice See Me Hear Me Funding My Choices My Choice, My Way Know Me, Include Me, Finding The Person in The Policy
Seah, S. S. L., Chenoweth, L., & Brodaty, H.	Person-centred Australian residential aged care services: how well do actions match the claims?	Australia	To investigate whether services were person-centred from the perspective of a convenience sample of older residents, their family members, and staff of aged care homes that claimed to be person-centred. In what respects are aged care homes person-centred, as claimed?	Qualitative	Qualitative research	Informed Choice See Me Hear Me My Choice, My Way Know Me, Include Me, Finding The Person in The Policy

DISCUSSION

Six themes were derived from the studies included in this review: Informed Choice, See Me Hear Me, My Choice My Way, Finding The Person In The Policy. Funding My Choices, and Know Me Include Me (see Table 1)

INFORMED CHOICE

Scholarly consensus suggests that access to reliable information is critical for the effectiveness of Consumer-Directed Care (CDC) in aged care services [8, 21, 22, 24]. In the context of CDC, it is highlighted that individuals are entitled to actively engage in their care decisions. The role of reliable information is emphasised as pivotal, equipping individuals with the necessary knowledge to assess and evaluate their care options. However, challenges in accessing accurate information have been documented by numerous studies, which illustrate the challenges participants encounter [8, 21]. The literature indicates that a lack of access to reliable information renders individuals' incapable of making informed decisions, leading to a reduction in their autonomy and control over their care [22]. Consequently, the importance of providing clear and readily accessible information is underscored as crucial in enabling consumers to make well-informed choices regarding their care.

In the realm of aged care, effective communication is identified as essential in ensuring access to reliable information [3]. The imperative for aged care providers to deliver precise information about care, treatment alternatives, and support services available to consumers is recognised [3]. Through clear and transparent communication, it is posited that consumers are empowered to understand the available choices and actively engage in the development of their care plans. This can be facilitated by the creation of informative materials such as fact sheets, brochures, and online resources 8. The adoption of plain language and the use of various communication channels are suggested to enhance the effectiveness of information dissemination [23]. Furthermore, the customisation of resources to meet the unique needs of consumers is advised, ensuring the delivery of comprehensive and relevant information, including funding options [22, 24]. By providing a clear decision-making process, it is asserted that providers can ensure active consumer participation in care planning [25].

SEE ME, HEAR ME

Consumers

Research indicates that principles such as person-centred care, respecting individual preferences, promoting shared decision-making, and empowering consumers are pivotal for enhancing the care experience and improving quality of life for those receiving health and social care services. Effective communication among providers, case managers, care workers, and consumers, along with their significant others, is essential for comprehending and catering to individual needs and preferences [8, 26].

The literature advocates for an active engagement strategy with consumers, which enables providers to gain valuable insights that are crucial for tailoring care approaches. Emphasising a person-centred framework, which centers on the unique needs, preferences, and goals of consumers, is shown to be instrumental in involving them in the decision-making process and ensuring they have access to high-quality services that align with their requirements [24, 26].

Particularly within aged care, adopting a person-centred approach is highlighted as key to enhancing consumers' quality of life [3]. This approach adjusts care to meet individual needs, preferences, and values, thereby encouraging shared decision-making and care planning. The adoption of genuine person-centred and consumer-directed care models is emphasised as a means to empower individuals, foster autonomy, and improve the overall care experience3. There is a growing shift towards personalised care in aged care services, with a focus on tailoring support provision away from conventional service-led models [26]. The role of management and staff in implementing person-centred care is highlighted, along with the necessity for training in person-centred service awareness, knowledge, and skills [26].

The literature emphasises the importance of consumer choice in care services for promoting independence, self-determination, and the use of diverse support sources to maintain independence [22, 28, 29]. Nonetheless, it cautions against the risks associated with a 'one size fits all' approach, which could exacerbate inequalities as individuals with better finances and education might benefit more from consumer choice [22]. Thus, there is a call for ensuring that personalised support and service

delivery are accessible and equitable for all individuals, regardless of their circumstances [22, 28, 29].

Providers

The literature underscores the critical role of consumer choice and access to high-quality providers in delivering personalized and effective health and social care services [8]. Russell [8] emphasises the significance of consumers having access to a range of high-quality providers that cater to their diverse needs and preferences, enabling them to select those that best meet their individual requirements Further, Bennett [3] points out the necessity for healthcare providers to undergo additional training to enhance communication support, ensuring they can effectively meet the varied needs of consumers, including those with communication impairments, by adopting various communication methods, tools, and strategies.

Gill's [28] observations on consumer hesitancy and the fear of negotiating for more tailored services highlights the need to create a supportive and understanding environment that empowers consumers to voice their concerns and actively engage in decision-making regarding their care [28]. To facilitate consumer choice, Laver and others [30] emphasise the need for greater transparency and improved provider communication, particularly regarding any change in consumer circumstances.

The literature identifies potential challenges to Consumer-Directed Care (CDC), such as inflexible service designs and varying experience levels among providers [31]. It emphasises the importance of ensuring service designs are adaptable and responsive to the diverse and evolving needs and preferences of consumers. alongside facilitating access to preferred providers and suitable service packages to enable meaningful consumer choice [32].

The existence of a marketplace where service providers distinguish themselves by offering value-driven, high-quality services is beneficial [30]. However, concerns about consumer vulnerability and the potential exploitation by unscrupulous providers have been raised [30]. In a competitive market, it is imperative for service providers to proactively understand and meet the needs and preferences of their target audience to remain viable and ensure quality care that aligns with consumer expectations [30]. The literature suggests prioritising transparency of arrangements and access to advocacy services to safeguard consumer rights and wellbeing [30, 31, 32, 33].

Notwithstanding that health and social care providers should be attentive to consumer concerns or complaints and offer comprehensive information about care services, empowering consumers to make informed care choices [33]. The transition towards a consumer-led approach requires tailoring care to meet individual needs while adhering to principles that ensure dignity and human rights [33]. While aged care homes may be attempting to adopt person-centred approaches, a comprehensive understanding of the requirements for a system-wide person-centred approach is lacking [26]. Continual assessment and enhancement of person-centred care provision are essential for its effective implementation.

MY CHOICE, MY WAY

The scholarly discourse underscores the pivotal role of aged care services in bolstering the well-being and quality of life of older individuals. The key findings from the studies highlight the essential factors related to care workers, communication support, care consistency, staff continuity, workforce shortages, and staff training and development [3, 8, 25, 29,32]. The findings highlight the challenges and opportunities in improving consumer choice in aged care services.

One fundamental aspect identified across much of the literature is the importance of care workers with the necessary training, competence, trustworthiness, punctuality, and empathy [3, 8, 21, 26, 30, 33]. Consumers greatly value access to and choice of consistent care workers who work at regular and set times while demonstrating flexibility to accommodate changing needs. This consistency promotes the development of positive relationships between service users and care workers, enhancing the overall care experience [8].

A consistent theme across studies is the emphasis on the necessity for care workers to possess training, competence, trustworthiness, punctuality, and empathy [3, 8, 21, 28, 29, 32, 33]. The literature reveals that consumers place high value on having access to and the ability to choose care workers who are consistent, work at regular and established times, and exhibit flexibility to meet changing needs [3, 8, 24, 25]. Such consistency is vital for fostering positive relationships between service users and care workers, thereby enriching the care experience8.

Furthermore, the need for augmented staff training to address consumer preferences, communication requirements, and enhance both consumer-staff and

social interactions is highlighted [3, 8, 21, 28, 29, 32, 33]. To respond to the diverse communication needs of consumers, additional training for care workers is advocated, enabling them to better comprehend and meet the needs of consumers, ultimately elevating care quality [3, 8, 24]. Staff training and development emerge as crucial elements for ensuring high-quality care and supporting consumer choice, especially for those new to the aged care sector [25]. Emphasising individualised care necessitates adequate resources and support, including proper staff-resident ratios [33, 24].

The literature also points to the importance of consistency and continuity in care. Regular interactions with the same care workers over time lead to the development of meaningful relationships and more effectively meet individual care needs [21,24]. Prioritising consistent worker assignments empowers consumers in their care decisions and underscores the importance of nurturing long-term connections between service users and care workers [24]. Conversely, high staff turnover is identified as detrimental to personalised care services, with staff continuity and retention being critical for maintaining quality care [21,22].

Workforce shortages present significant obstacles in aged care delivery, necessitating focused recruitment and training initiatives to attract and retain qualified staff. Ensuring confidentiality, obtaining consent, safeguarding safety, and maximising consumer engagement are crucial for creating an environment that supports consumer choice and delivers effective care [28, 29]. Care workers have a key role in promoting independence and autonomy within aged care services, with negotiation around individualised care enhancing consumer empowerment [23]. Building relationships with consumers and representing the service provider in the community are recognised as important aspects in enhancing consumer choice.

FINDING THE PERSON IN THE POLICY

The scholarly literature in this review have emphasises the integral role of policy in influencing the provision of aged care services, particularly regarding consumer choice. Key policy considerations include the implementation of effective regulation, the establishment of transparent fee structures, the mandating of staff training, and the enhancement of communication services [3, 8, 24]. These elements are critical in advancing Consumer-Directed Care (CDC), personalised support, and the empowerment of individuals.

The regulation of aged care providers and the clarification of fee structures are highlighted as essential policy components [3, 8, 21, 22, 24]. Such measures are vital for ensuring that care is both affordable and of high quality. The literature calls for policy efforts to set minimum standards for staff training, thereby equipping caregivers with the skills and knowledge necessary for delivering superior care [3, 8, 21, 22, 24, 25, 27]. Additionally, policies aimed at promoting staff continuity and reducing turnover within aged care services are advocated [3, 8, 21, 22, 24, 25, 27].

Challenges related to cost constraints and the implementation of policies for individualised care are significant. There is a noted need for support to drive the cultural and philosophical shifts required for the realisation of consumer-led care planning [22, 28, 32]. By addressing these issues, policies can facilitate meaningful opportunities for consumer choice and control [8]. The literature suggests that policy should also address the dynamic and procedural nature of choice-making, enabling consumer participation in governance and underscoring the promotion of independence, choice, and control as central goals of government reforms [8]. CDC initiatives and funding models that prioritise personal care and therapeutic services are seen as a means to bolster consumer choice [23, 24, 29, 31].

For policies to be informed and effective, the involvement of consumers in their development is necessary. Policies should ensure that adequate funding and support are available for providers and staff to acquire the competencies needed to meet assessed care needs efficiently [27, 33]. The impact of policy on equity, especially among diverse populations, requires careful consideration to guarantee fair and inclusive provision of health and social care [25, 27, 33]. The commitment of organisations to a vision that supports person-centred care is deemed crucial [26]. Policy and planning efforts should focus on creating foundational system structures that facilitate the delivery of person-centred care. Aligning policy objectives with organisational practices is essential for fostering high-quality care experiences [26].

FUND MY CHOICES

The literature consistently highlights the importance of reasonable fees and equitable funding as key factors in enhancing consumer experiences within aged care. Studies have shown that participants who enjoyed

satisfactory experiences often credited the reasonable fees charged by their providers [8, 21, 24, 25, 30, 31, 33].

Conversely, a notable number of individuals encountered barriers to accessing needed care due to high fees [8, 21, 22, 25, 31-33]. Interestingly, despite acknowledging the fees as excessive, some studies showed that some participants were reluctant to switch providers, valuing the positive relationships established with their care workers [8, 22, 30]. This indicates that the relationship aspect can influence the decision-making process regarding changing providers.

Regarding direct payments, some studies showed that older individuals opted out, mainly due to the perceived complexity and the additional responsibility of managing finances, including banking, accounts, and payroll operations [31, 32, 33]. Concerns over managing the financial aspects of care, such as apprehensions regarding costs, potential impacts on savings, and anticipated future cost increases, were prevalent [31, 32, 33]. While self-managing funds could potentially reduce administration fees and increase available funds for services, the complexity of funding arrangements often renders self-management daunting [31]. The studies also reported on the limited availability of Consumer-Directed Care (CDC) packages and a general lack of transparency in pricing and service delivery [8, 21, 22, 24, 25, 30, 31, 33].

The provision of individualised budgets is posited as a way to empower aged care consumers to take charge of their care management [30]. Nonetheless, the existing funding model for aged care is marked by complexity, posing significant navigational challenges for consumers and their families [25]. There are notable affordability concerns, particularly for those with limited financial means [25]. Calls for increased transparency in aged care costs and enhanced support for consumers and families in understanding their financial responsibilities and choices have been made [25]. Costs are a pivotal consideration in CDC, often necessitating that service choices be made based on affordability rather than actual need.

The literature highlights the necessity of fully implementing individualised care policies to provide meaningful opportunities for choice and control to older service users [22,24]. Such implementation may also influence financing, as offering individualised care could require additional resources or the reallocation of existing ones [22, 24].

KNOW ME, INCLUDE ME

The findings from this review highlight the importance of social engagement and maintaining connections within the context of aged care. Consumers desire participation in community-based activities that promote social connection and wellbeing. Such interactions must be meaningful, tailored to consumer interests and inclusive of varying levels of cognitive abilities. This highlights the need for adequate financial allocation and support from service providers to enable consumers to participate in community-based activities that promote social connection beyond the confines of the facility and overall wellbeing.

The literature identifies social engagement as a critical element of person-centred care, necessitating the translation of individualised care policies into actionable strategies. This approach allows consumers to make informed choices and maintain control over their care, including access to genuine and significant social interactions [3, 8, 22, 31]. The role of social engagement is significant and meaningful social interactions can positively influence individuals' choices regarding their care, and increased social engagement can mitigate feelings of loneliness and isolation among consumers [3, 8, 22, 31]. Conversely, negative experiences are linked to poor communication and a lack of respect and can significantly minimise active participation by consumers in decisions related to their care needs [3, 8, 22, 31].

Social engagement is integral to the design and evaluation of aged care services. This integration emphasises the importance of informed, appropriate, responsive, and effectively delivered polices to facilitate meaningful social interactions among consumers. The adoption of personalised and inclusive approaches, alongside the establishment of robust policies, and supportive environments that prioritise human connection and community engagement is fundamental to the delivery of effective person-centred care [3, 8, 27, 33].

CONCLUSION

While designed to support older Australians to remain at home as they age, the aged care system presents inherent challenges to consumer choice. One primary obstacle is the limited availability of service providers, particularly in rural and remote areas, restricting older individuals' options for CDC. Navigating the complex aged care system poses

another significant hurdle, as older adults and their families struggle to understand available choices and access appropriate services. Additionally, staff attitudes and rigid service designs can hinder the realisation of CDC, while cognitive impairments further impede informed decision-making. These barriers collectively diminish the ability of older Australians to exercise control over their health and care options.

Amid these barriers, several enablers hold promise for enhancing consumer choice in aged care. Access to information stands out as a pivotal factor, empowering older individuals, and their families to make informed decisions about their care options. Personalised care packages that cater to individual preferences and needs offer opportunities for tailoring services, promoting a sense of autonomy and dignity. Policy reforms emphasising person-centred care and consumer-directed approaches also pave the way for greater choice and control. Furthermore, fostering engagement with family members and the care workers, and recognising the role of older adults as active citizens rather than passive consumers, can contribute to a more empowered decision-making process and an improved experience for all stakeholders.

To promote consumer choice in aged care, stakeholders must address the identified barriers and leverage the enablers required, including the improvement of information dissemination, simplifying the aged care system, and enhancing staff attitudes to encourage open dialogue with consumers. Personalised care plans should be developed in collaboration with older individuals, incorporating their preferences and values. Policymakers should prioritise CDC principles, and service providers should adopt innovative practices that prioritise older adults' autonomy. By fostering a culture of inclusivity, transparency, open communication and partnership, the aged care sector can work towards ensuring that older Australians have the agency to shape their care experiences and exercise meaningful control over their health and wellbeing.

STRENGTHS AND LIMITATIONS

This paper synthesises the current literature on the facilitators to promote CDC. To eliminate bias, team composition included academics with broad experience and at each stage two reviewers examined each paper and consensus achieved.

The Royal Commission into Aged Care 14 and COVID-19 pandemic disrupted the aged care system impacting the ability of providers to make meaningful change. Workforce shortages and the implementation of emergency responses to the pandemic shifted the focus to protection of consumers, the workforce, and the delivery of core services. The lag between handing down of the Final Report and Recommendations of the Royal Commission 14, and their implementation has also impacted progress towards CDC.

The review found a paucity of quality research available that aligned with the research question, signalling the need for further research into the factors that can facilitate successful CDC.

Whilst all attempts were made to identify the literature, keyword searches are problematic for this topic with various names used to describe aged care. To address this the research team applied a variety of common terms, widely used to capture the relevant literature on the topic under study.

CONFLICT OF INTEREST STATEMENT

No conflicts of interest.

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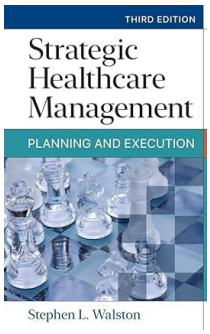
BOOK REVIEW

BOOK REVIEW - STRATEGIC HEALTHCARE MANAGEMENT: PLANNING AND EXECUTION BY STEPHEN L. WALSTON

Review by Vernando Yanry Lameky, Universitas Kristen Indonesia Maluku, Ambon, Maluku, Indonesia

Correspondence: journa@achsm.org.au



Strategic health service management combines aspects of traditional management with an emphasis on long-term strategies and adaptation to dynamic changes in the health environment [1]. It aims to improve service quality, operational efficiency, and overall population health results [2, 3]. This is what was explored by Walston (2023) in his book Strategic Healthcare Management: Planning and Execution, in the Third Edition.

Innovative steps and techniques in strategic health service management: (1) It is important to integrate strategic planning, implementation, and evaluation process into operational management. This ensures that the strategic plan is not only a static document but also becomes the basis for concrete actions and ongoing evaluation. (2) Health technology, such as diagnostic tools, information technology, and pharmacy, must be utilized effectively. This can include the development of radiologists, the integration of information technology into operations, or the application of sophisticated pharmaceutical systems. (3) Health organizations need to carry out a comprehensive restructuring to adopt a value-based service model centred on patients. This requires an innovative strategy to change the direction of the organization and overcome changes in the health service landscape. (4) Through case studies and learning, health service leaders can understand the strategic challenges that health organizations commonly face. This helps identify relevant strategic principles and navigate constant changes in the health service sector. (5) In dealing with the complexity of the health service environment, skilled strategic management is needed. This involves the ability to design and implement innovative strategies and the flexibility to adjust to continuous changes.

The novelty of this book lies in its comprehensive and inclusive approach, integrating contemporary strategic theories with practical applications that are adapted to the rapidly changing healthcare environment. This not only includes traditional strategic theories and general strategic methods but also provides practical tools for leaders to make better strategic decisions, emphasizing the application of strategic principles to achieve mission benefits in healthcare organizations.

This book provides a comprehensive insight into strategic health service management consisting of seven sections (17 chapters) with clear, concise explanations and accompanied by examples or case study results that strengthen ideas or points of view. Part I provides a solid foundation for leaders to understand the diverse nature of strategic management and its critical role in guiding healthcare organizations through the challenges and opportunities they face (chapter 1). Part II highlights the importance of aligning an organization's strategy with its market structure and environment to maintain or enhance market power and strategic decision-making capabilities (chapter 2-chapter 5). Part III emphasizes the critical role of an organization's purpose, defined through its stakeholders, values, mission, and vision, in shaping strategic direction and ensuring consistency of actions with the organization's overall goals. This helps ensure that all strategic efforts taken by the organization are aligned with key objectives (chapter 6). Part IV emphasizes the need for a comprehensive understanding of an organization's position in its environment to develop and implement effective strategies. This understanding becomes the basis for

strategic planning, implementation, and achievement of the organization's mission and vision. (Chapters 7-10). Part V outlines the various plans an organization can use to achieve its mission and vision, emphasizing the importance of having a written plan to communicate strategic direction, schedule, and responsibilities. This plan includes a strategic plan, goals, project charter, marketing plan, and business plan. Each type of plan has a different purpose in guiding an organization to achieve its mission and vision. Strategic and marketing plans are developed to establish overall marketing direction and strategy, while business plans focus more on the organization's operational and financial blueprint (Chapters 11-and 12).

Part VI emphasizes that successful strategy implementation requires a combination of appropriate organizational structure, effective change management, strong leadership, and ongoing monitoring and evaluation of strategic efforts. This forms a solid foundation for effectively achieving the organization's vision and mission (Chapters 13- 15). Part VII emphasizes that monitoring strategic achievements is a crucial step in managing an organization effectively, ensuring alignment with goals and vision, and enabling the organization to learn and develop continuously (Chapter 16and 17).

Some characteristics and strengths of this book Include: (1) This book combines traditional strategic theories with general strategic methods and provides practical tools for analyzing the healthcare market. (2) The unique perspective of the author as CEO, educator, and consultant in the healthcare industry provides valuable insight into strategic theory and practical application. (3) This book is equipped with a series of instructor resources, such as test banks, PowerPoint slides, answers to study questions, guidelines for case studies, and transition guidelines to new editions. The existence of this resource increases the use of this book in academic arrangements, making it easier for lecturers to use the material in teaching. The target readers of this book are students (health and management), health service leaders, lecturers, professionals and anyone interested in increasing knowledge and skills related to strategic health service management.

DISCLOSURE OF POTENTIAL CONFLICTS OF INTEREST

The author reports no conflicts of interest. The author alone is responsible for the content and writing of the paper.

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