Asia Pacific Journal of Health Management

Volume 11 Issue 2 – 2016

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The mission of the Asia Pacific Journal of Health Management is to advance understanding of the management of health and aged care service organisations within the Asia Pacific region through the publication of empirical research, theoretical and conceptual developments and analysis and discussion of current management practices.

The objective of the Asia Pacific Journal of Health Management is to promote the discipline of health management throughout the region by:

- stimulating discussion and debate among practising managers, researchers and educators;
- facilitating transfer of knowledge among readers by widening the evidence base for management practice;
- contributing to the professional development of health and aged care managers; and
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ISSN 2204-3136

EDITORIAL

Co-creating and Developing Health Management Theory and Practice: a global opportunity?

In recent years much has been made of the need to effectively translate knowledge developed through research into health systems practice. [1] Literature suggests that the acceptance of research findings would be more likely if the research were achieved and disseminated into practice where it occurs in a more collaborative alignment of researchers and practitioners. [2]

Contemporary health policy and practice is indeed calling for more evidence-based research in areas of clinical practice, clinical pathways and in the broad focus on quality and safety of patients in our health systems. What about health management, who leads the way in this space?

The Statement on Advancing Implementation Research and Delivery Science (IRDS) from the Alliance for Health Policy and Systems Research [1] has called for extended use of IRDS 'to better address local, national and global health'. [1, p.1] The statement defines IRDS as 'a type of health policy and systems research that draws on many traditions and disciplines of research and practice'. [1, pp.1-2] The Statement has also called on Editors and publishing organisations to promote and publish around the importance of implementation research and delivery science in health systems.

The call has caused this Editor to pause and reflect on the role of this Journal and that of the Australasian College of Health Services Management (ACHSM), the professional body for health managers. The APJHM is the professional peer reviewed Journal of ACHSM. The Journal is a significant resource for College members but openly available to all health professionals. The College and the Journal both have quite clear commitments and roles in the education and development of health managers and of health leadership capability. Both are involved in the dissemination of knowledge and implementation of best practice in management within and across health systems. [3]

The College, of course, was established many decades ago by health managers of the time, across Australian State boundaries, who were visionary about their role and the need to develop it as a profession in its own right. Similar likeminded and visionary managers and health leaders also demonstrated leadership in the establishment of the Journal more than a decade ago. ACHSM has also extended its role across national boundaries in affiliation with like minded organisations in New Zealand and Hong Kong. This places ACHSM in a unique position to encourage a similar approach to that called for in the IRDS Statement [1] in respect to the management of health systems.

The College in its delivery of education programs, the fellowship process, the mentoring program, the library and the Journal has consistently utilised and engaged the membership, both practising health managers and academics in the delivery of its member services. That utilisation across practitioners and researchers extends across accreditation of tertiary health management programs and publication of texts [4] undertaken in collaboration with the Society for Health Administration in Education (SHAPE), representative of health management academic programs. So the College is well-placed to participate in and develop health management research into knowledge and evidence-based practice.

The Journal extends the collaboration between researchers and health managers and other operational health professionals by publishing research and increasing the participation of College members both operational and as academics, collaboratively through authorship, peer review and management processes of the Journal. It goes further by also utilising others who are non-members in these processes across academic schools that are not traditionally health management and across national health systems boundaries within the Asia Pacific. This is the natural extension in a world where healthcare delivery organisations and government organisations are focused on the performance of their services while the workforce they employ and performance measurement is increasingly globalised.

For example, Health Systems Global claims to be the first international membership organisation to promote

health systems research and knowledge translation. An organisation created from and launched at the 2014 Global Symposium on Health Systems Research, it now has 1500 members from 96 countries and has established some ten Thematic Working Groups (TWG) of members to address research and knowledge translation approaches through members nominating to join a TWG. This brings together researchers, decision-makers and implementers. There are established criteria and membership requirements with secretariat support but essentially they are self-organising and resourced by members pursuing a common theme. [5]

This is an innovative approach to knowledge translation and learning and it might be useful to reflect on the potential of this approach to establish global networks of practice and learning in leading and managing health systems. The healthcare industry is 'increasingly becoming a knowledge-based community that depends critically on knowledge management (KM) activities'. [6, p.13] Hustad, in a different context than the healthcare industry explored the phenomenon of knowledge networking in distributed work describing the practice as distributed networks of practice (DNoP), a description that extends the concept of a community of practice. [7] Hustad considers communities of practice to be closely knit and connected groups engaged in shared practice, meeting face-to-face and communicating directly, [7, p.69] whereas 'DNoP comprises a larger, geographically dispersed group of participants engaged in a shared practice or common topic of interest'. [7, p.69]

While that article describes networks in a commercial entity across national borders it does also describe problem solving, business improvement and innovation networks. DNoP are described as 'knowledge networking infrastructure' [7, p.77] and as such are likely to be self-organising and emergent, supported by technology and are structures that sit alongside formal organisation structures. Hustad warns organisations wanting to use these approaches to learning to cultivate and sustain their growth by avoiding the imposition of normal organisational control approaches. In fact, another study by Agterberg et al [8, p. 85] emphasises the need to manage DNoP 'without killing them'. Van Baalen and colleagues explore the applicability of a knowledge portal as potentially providing the infrastructure and support technology described by Hustad and emphasise that the 'diffusion of innovative knowledge as a form of collective action requires social organisation' [9, p.301] that also requires 'an interactive process' involving 'different collective actors'. [9, p.301] For those more closely interested in the 'network paradigm' Borgatti and Foster provide an interesting review and typology. [10]

So is this an opportunity for a professional College to extend its reach through likeminded people engaging together, across both organisational and geographic boundaries [11] to extend their learning and to develop greater knowledge about improving leadership and health management practice in a collaborative distributed manner. 'Knowledge generation in networks of practice needs to be informed by a sense of community' and needs 'the umbrella element of communities of practice' [12] to provide the technology structure, resources and some level of governance.

The vision shown in the history of the College reflects like-minded people and communities of practice, health managers coming together across state and territory boundaries and health systems to establish a national organisation. This vision was similarly extended by practice and boundaries into the Asia Pacific through collaboration with similar organisations. Is the concept of DNoP a possible vision and compelling option to extend the professionalism of health management and the co-creation of health management knowledge through a more global focus? [13] Is their sufficient interest 'out there' to test the concept?

DS Briggs

Editor

Dr DS Briggs is a former National President of ACHSM and is currently President of SHAPE.

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INVITATION

What problem is being solved?

An invitation to submit an article to a special issue of the ***Asia Pacific Journal of Health Management*** (APJHM) entitled **'Critical issues in health systems management'.**

What critical issue(s) in health systems management do we need to address to improve the healthcare outcomes of patients, communities, States/Provinces and Nations?

Context

It is more than a decade since the question **What problem (in respect to health system restructuring) is being solved?** [1] was proposed.

Most health systems continue to be restructured or be modified without much thought to underlying public policy. Health systems shift from perspectives of health being seen as a public good to a series of products being delivered in competitive markets through insurance systems, fundholding and commissioning. Services are privatised and/or delivered by non-government organisations. Acute care continues to be delivered in large centralised systems sometimes described as 'local', often funded historically despite the availability of tested casemix systems. Patient safety, quality and innovation are monitored through a range of state/province and national agencies while performance measures and outcomes are regularly measured and the results published. Primary healthcare, in many systems, remains fragmented. We seem to be transfixed about the implications of ageing populations and the chronic disease burden. Communities with poor socio-economic indicators do not seem to respond to current traditional health services and this raises the question of where the boundaries of healthcare might necessarily be drawn?

Within the system we manage through the strong personal commitment of health professionals with the hope that the language we use will bring needed change and improved healthcare delivery.

Our narrative is about greater use of technology, e-health, electronic records, a focus on 'avoidable admissions', evidence-based practice, clinical pathways, hospital in the home and patient-centred care, healthy ageing and innovation at all levels. Meanwhile, our research scientists and research institutions continue to stretch the boundaries of care and cure and, perhaps prevention, beyond that previously thought possible. International comparisons suggest that despite the context many are performing well!

The invitation

What do you think are the critical issue(s)?

We invite you to provide a perspective in an article that addresses a critical issue(s) in health systems management.

Research articles, research notes, review articles and analysis of management practice are welcomed and contributions from across health systems will be appreciated.

Contributors' guidelines are available as a PDF at: https://www.achsm.org.au/Public/Resources/Journal/Submit_an_article_/Public/Resources/Journal/Invitation_to_Submit_an_Article.aspx?hkey=45e4c822-a3d2-423e-965ed335afa1dfd4

The deadline for contribution from invited authors for peer review is September 30, 2016. Abstracts provided earlier would assist. Contributions from other authors would be appreciated with earlier submission dates appreciated by **30 August, 2016**. Advice to the Editor that authors are intending to submit as soon as possible will assist.

Regards

David Briggs
Editor

1. Dwyer JM. Australian health system restructuring – what problem is being solved? Australia and New Zealand Health Policy. 2004;1:6.

IN THIS ISSUE

In this second Issue we present a range of articles from authors about health service and health systems management topics, on this occasion from across five different countries' health systems in the Asia Pacific. We also report on a response from a reader to an article that appeared in the first issue, 11(1) of this year.

The letter to the Editor is from Natasha Farrell in response to an earlier article about 'Improving the health system with performance reporting – real gains or unnecessary work?' We thank Natasha for this contribution and a subsequent response from the article authors, Day and South. Gaining differing perspectives from readers to published articles is welcomed and encouraged. Our thanks again to Natasha and we look forward to further contributions.

Our next article is from Ervin and colleagues on the implementation of shared decision-making (SDM) in the Australian context. According to the authors there is emerging evidence of successful models of SDM and its benefits internationally but there are also many challenges and careful consideration needs to be exercised in its widespread implementation in clinical practice. They suggest that there should be a co-ordinated, nationwide approach to the development of SDM in Australia.

Myu and colleagues provide a review article, 'A review of the ACHS Clinical Indicator Program after 20 years'. According to the authors this article is 'for the benefit of both healthcare administrators and clinicians, particularly for those involved in quality review and what is currently termed 'clinical governance'. The article traverses the history of clinical indicator development and outcomes in Australia and internationally. The authors conclude that the data provided represents the opportunity to create knowledge critical to improved patient outcomes.

The next contribution comes from New Zealand. Doolan-Noble and colleagues present a research article entitled 'Developing and implementing a framework for System Level Measures: lessons from New Zealand'. The article reports on the practical experience of developing and implementing System Level Measures (SLM) in one district wide health system in New Zealand. The article aims to present the experiences of those involved in the implementation and development of this project and identifies the positive and negative factors that arose and two important success factors to the successful implementation.

Beatty provides a research article 'Making hospital governance healthier for nurses'. This article describes research that explored nurses' expectations of hospital governance and the relevance of nurses' perceptions in respect to their turnover intentions in one health service within a state health system. The findings suggest that nurses working in public hospitals value a specific style of governance.

Suryanto et al from Indonesia have provided a review article on healthcare financing in Indonesia. The author reports on the implementation of decentralised healthcare and the transition to universal healthcare and compares Indonesian progress and experience with other countries such as Thailand, Cambodia and Vietnam.

Hashemi and colleagues from Iran report on the need for an efficient system of revenue collection given changes to the funding of public hospitals that shifts the funding predominantly to health insurance systems. The article reports on a process of ensuring accuracy by claiming adopted in one hospital, which is the largest public hospital in southern Iran.

Two articles from authors in India complete this Issue. Agarwal and colleagues in a research article report on assessing the determinants of adoption of a home healthcare service in India, analysing doctors' knowledge, attitudes and perceptions in this regard. Rai and Saxena conclude the Issue with an analysis of a number of factors affecting compensation and benefits to employees in job, career satisfaction and job stress in both public and private hospitals in Lucknow, India.

TO THE EDITOR

Re: Improving the Health System with Performance Reporting – Real Gains or Unnecessary Work? GE Day and LA South. Asia Pacific Journal of Health Management. 2016;11(1): 8-13.

Day and South [1] put forward some excellent arguments about the challenges of performance reporting in healthcare. There is no doubt that reporting can be a burden, more real time data is required and improvements in reporting need to be made.

However, the authors did not provide a strong argument of their claim that performance reporting will not prevent another major healthcare scandal, such as those at the Bundaberg Hospital or NHS Mid Staffordshire Trust, and that a changed culture is more of a driving factor.

A common finding in the inquiries of the health scandals of the late 1990s and early 2000s was that whilst reporting was in place, [2] and in much sentinel event reporting, the reports failed to highlight the compromised patient safety. [2] However, what was also common in all of these cases is that staff concerns were ignored. [2,3] This would suggest that those in authority did not want to acknowledge or address the issue, and as with any tool, performance reports are only as good as the user allows them to be. Further, the Bristol inquiry leaves the reader without a doubt that the lack of defined clinical performance reports contributed to the sentinel events not being identified earlier. [4]

Whilst I agree that a change to culture is also key to driving a better and safer healthcare, Day and South as well as Russell and Dawda failed to recognise that reporting will facilitate 'driving a system of care that is open to learning, capable of identifying and admitting its problems and acting to correct them'. After all, the fundamentals of successful reporting are identification and action. I also believe that there is no greater tool to learning than being able to quantify where we are going right and where we are going wrong.

I would suggest that there should be more focus on what reporting has achieved. Without performance reporting there would not be an awareness of many issues within the healthcare system. For example, it is a result of reporting that the extent hospital acquired infections (HAI) is known, and subsequently causation and prevention addressed. However, what is not transparent are the catastrophic events that have been prevented as a result of actions taken in response to results highlighted in performance reports. Whilst this would be a contentious issue, maybe more disclosure in this area would give greater validation to reporting benefits.

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Response from the Authors to the Letter to the Editor:

On behalf of the authors I would firstly like to thank the reader for continuing the discussion and debate around the value of performance reporting. We are encouraged to see that others are taking a keen interest in this growing topic. We certainly agree where the writer says '…what is not transparent are the catastrophic events that have been prevented as a result of actions taken in response to results highlighted in performance reports.' This paper did not set out to look at what has been individually achieved by performance reporting, rather question the inconsistencies in the current system and to raise possible solutions.

The main aim of the paper was to argue that collecting data itself will not prevent another major health scandal such as Bundaberg Hospital or the NHS Mid Staffordshire Trust. However, prevention is highly reliant on what clinicians and hospital managers deduce from that data and have the courage to put remedies into action that prevent these tragic circumstances repeating themselves. Equally, simply reporting data will not create systems or culture change: staff create that change, data supports the decision. What this paper endeavours to portray is that with the dearth of data available, health services need to be clear about what they will collect, analyse, report on and use to improve their local health services. Health services need to develop a culture of safety and accountability if performance reporting is to be an important tool in driving systems improvement.

The Australian health system is still challenged by a lack of consistent health measures, approaches to data analysis, standardised reporting frameworks and technical ability to analyse and understand the myriad of data available. This paper has raised these issues with a view to continuing to

create discussion and debate so that the quality and safety of patient care can be improved right across Australia, rather than where individual health services or hospitals have the financial and technical resources to improve their own outcomes.

Dr G E Day
for the authors

Editor's Note: Readers are welcome to make further contributions in response to the matters raised in the article and this initial response.

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Implementation of Shared Decision-Making in Australia

K Ervin, I Blackberry and H Haines

Abstract

Shared decision-making (SDM) is the process of clinicians and patients participating jointly in making healthcare decisions, having discussed evidence-based treatment options and the potential risks and benefits of each option, taking into consideration the patient's individual preferences and values. SDM is ubiquitous in Australian healthcare policy. While there is good evidence for utilising SDM, clinicians' knowledge of SDM, the current uptake, effectiveness and acceptability of SDM in Australia is largely unknown. The challenges perceived by clinicians to implementing SDM in clinical practice and potential moral, legal and ethical dilemmas require further debate and consideration.

Abbreviations: **SDM – Shared Decision-Making.**

Key words: **shared decision-making; implementation; policy.**

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The principles of shared decision-making (SDM) are essential in healthcare delivery and aim at developing a genuinely patient-focused healthcare system. [1] Evidence suggests SDM reduces healthcare costs and variations in care while increasing patient compliance and satisfaction with treatment. [2] Urgent and widespread implementation of SDM in all healthcare settings has been advocated in Australia, [3] including Australian healthcare policy. [4] Despite emerging evidence of successful SDM models and their benefit internationally, [5] there are also many challenges and careful consideration needs to be exercised in the widespread implementation in clinical practice in Australia. Few training opportunities in SDM currently exist for clinicians, either at postgraduate level or continuing professional development. [3] This may pose a risk of an ad hoc implementation by ill-equipped clinicians, who increasingly provide care to patients with multi-morbidity.

Coulter and Collins [5] describe three essential components of shared decision-making:

- The patient is provided with current, unbiased evidence-based information about potential care, support or treatment, clarifying outcomes or uncertainties;
- There is decision support counselling with a clinician to clarify options and patient preferences; and
- There is a robust system to record patient preferences, communicate them to others and to implement the preferred choice.

Discrepancies exist between clinicians' self-reported use of SDM and observations of usual care. [1] One of the criticisms of SDM is the perceived time required to practise SDM with patients, in settings that are already time poor with clinicians overextended. [6,7] There are conflicting opinions among researchers about whether additional time is required to implement SDM. [3,6] Clinicians cite time constraints as the most frequently anticipated barrier to SDM [8] and policy or research has not satisfactorily addressed this. Time constraints do not simply relate to the decision-making process with patients, but also the time required to access

up-to-date research evidence, which may not always be readily accessible for clinicians, for specific treatment under consideration.

Additional challenges which need to be addressed include how clinicians can use the SDM process with patients who have cognitive deficits [9, 10] or low levels of health literacy. [11] Patients with diminished capacity add another layer of complexity to the SDM process for clinicians. [12] Clinicians must determine who can legally act as a surrogate decision maker, which is not always clear and may require time and skills from the clinician. [12] Further considerations include the surrogates' willingness to be involved, [13] and their intention to act in the best interests of the patient. [14]

The Australian Council on Health Standards [4] advocates for the implementation of SDM by all clinicians in all healthcare settings. The process of SDM conflicts with some current government directives and legislation that abrogate patient choice, such as childhood immunisation, male/female circumcision and euthanasia. This presents moral, ethical and legal dilemmas for clinicians, with no clear directives on how these are to be resolved. There is a tension for clinicians between adhering to clinical guidelines and law and respecting a patient's treatment preferences. [15]

Existing activity demonstrates Australian government agencies commitment to SDM by incorporating principles into policy, guidelines and planned training programs. [4,16,17] However, further research is warranted in all healthcare settings, for all disciplines, to complement emerging policy initiatives and to determine resource needs.

Over the past decade, a large gap between theory and practice of SDM continues. [8] The uptake of SDM in Australia, clinicians' knowledge of SDM and the level of preferred patient involvement are largely unknown. Rather than acting urgently as suggested, [3] more debate is warranted regarding training requirements and adequate support to implement a SDM process that is acceptable to both clinicians and patients according to ethical principles. Australian health policy should encompass a nationwide and co-ordinated approach in research, training and professional development in SDM.

Competing interests

The authors declare that they have no competing interests.

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REVIEW ARTICLE

A Review of the ACHS Clinical Indicator Program after 20 years

B Collopy, C Dennis, L O'Connor and M Nathan

Abstract

The Clinical Indicator Program, which was introduced into the Australian Council on Healthcare Standards' accreditation program two decades ago, has grown from one set addressed by 115 healthcare organisations to 22 sets with data received from over 800 healthcare organisations, resulting in a national database which is unique in its clinical diversity, reflecting every major medical discipline involved in hospital practice. The process for Clinical Indicator selection and review remains with the providers of the care, but the selection criteria are better defined and the evidence base strengthened. Early responses to their introduction were encouraging as improvements in patient management and outcomes were sought and achieved following review of comparative data, and some examples of these are provided. Clinical Indicator revision remains an important and major task and the original Hospital-Wide set of Clinical Indicators is now in its 12th version. The development and use of Clinical Indicators is increasing world-wide, and in Australia there are other organisations, including the Australian Commission on Safety and Quality in Healthcare, looking at Clinical Indicators to further understand the performance of healthcare organisations.

As clinical care changes, the challenges for the Australian Council on Healthcare Standards are to ensure the Clinical Indicators continue to reflect current practice, to retain clinician support, and also to ensure that the existence of its extensive and long-standing national clinical database is more widely known and utilised.

***Abbreviations:* ACHS: Australian Council of Healthcare Standards; ACIR – Australasian Clinical Indicator Report; ANZICS – Australian and New Zealand Intensive Care Society; APD – Adult Patient Database; CI – Clinical Indicators; HCO – HealthCare Organisation; PIRT – Performance Indicator Reporting Tool; RACMA - Royal Australian College of Medical Administrators.**

***Key words:* clinical indicators; accreditation; clinical databases.**

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Introduction

Twenty-two years ago the first set of Clinical Indicators (CIs) was introduced into the Australian Council on Healthcare Standards (ACHS) accreditation program. Initial support came from the Commonwealth Department of Health, which provided a total of approximately $2.2 million (in three yearly development grants) over a decade, and from Baxter Healthcare P/L. The co-operation of the Medical Colleges enabled relevant clinician input into the CI development.

This paper is written for the benefit of both healthcare administrators and clinicians, particularly for those involved in quality review and what is currently termed 'clinical governance', to inform of the changes which have occurred since the introduction of the program with regard to its growth, the CI development and revision process, the supporting information provided for contributors, the data collection process, the database itself and the changes in clinical practice, which are reflected in the data and which, to some extent, may have resulted from a process which allows for self (over time) and peer comparison.

Twenty-one years ago data from 115 healthcare organisations (HCOs) on one set containing 15 Hospital-Wide CIs were released. The CIs had been developed with the co-operation of the Royal Australian (now Australasian) College of Medical Administrators (RACMA). It was a world first for accreditation programs. Currently data are received from over 800 HCOs on 22 indicator sets containing over 300 individual CIs. All major disciplines are represented and the national clinical database, in its diversity, is the most comprehensive of its type in the world. The last printed report of the aggregate results was in 2003. If produced in hardcopy now it would amount to well over 600 pages. However the report is available annually via the internet or on CD and a hard copy summary of results remains available as the Australasian Clinical Indicator Report (ACIR) [1] (Australasian as a number of New Zealand HCOs now participate in the Clinical Indicator Program). Considering that the provision of CI data by HCOs is voluntary that is a significant achievement.

The ACHS now assists HCOs in data reporting through the provision of the Performance Indicator Reporting Tool (PIRT) and analysis of the data is performed externally each year for the ACHS by the Health Services Research Group at the University of Newcastle. Trending of data is only performed when there are four or more years of data available.

The program was introduced to measure and improve the quality of care, to increase clinician interest and involvement in quality activities and to lessen the possibility of an HCO receiving full accreditation and yet having poor patient management and outcomes.

Clinical Indicator selection

Content validity of the indicators is assured by their being provider developed. Three criteria were required in the development of a CI, namely that the subject chosen was of clinical importance, that data were available for its assessment and that as a CI it was responsive, i.e. that it could induce a change in clinical practice. These criteria remain appropriate to use today. In more detail they are:

1. Clinical significance

1.1 Disease burden (volume, cost, concern)

1.2 Content validity (measure of quality)

1.3 Evidence base (level of evidence)

2. Data value

2.1 Data elements (definable, accessible)

2.2 Reliability (accurate, reproducible)

3. Responsiveness (potential to improve care).

The CIs in this program address either the process of care such as a medication requirement, or the outcome of care such as a wound infection. The advantage of an outcome CI is that it is important in its own right, but disadvantages are that sufficient numbers are required to reduce chance variation, and that case-mix and illness severity may require determination. [2] An advantage of process measures is that the facility can act upon findings more quickly, however the value of the process selected as a CI should be evidence-based, as all of the current CIs are. In addition to addressing issues considered of importance by the providers of care and being supported by a comprehensive literature review, each set is endorsed by the relevant Medical College/Society prior to its release in a User Manual. The basic structure of a CI is shown in Box 1, together with the type of supporting information contained in the User Manual for each area of clinical activity being addressed.

HCO responses

Although provision of CI data is voluntary, HCOs are expected to provide data concerning their main service areas. Contributing HCOs receive six-monthly reports containing their results for the period, together with aggregate and peer comparative data. In 2014 the average number of individual CIs reported by HCOs was 22.

Box 1: An indicator in the area of cardiovascular disease and the type of information provided in the User Manual for Internal Medicine Clinical Indicators Version 6

Congestive Heart Failure (CHF) – prescribed beta blocker

CLINICAL INDICATOR	USER MANUAL SUPPORT
Numerator – Number of patients discharged with a diagnosis of CHF who have no contraindications to use of beta blockers and who are prescribed beta blocker therapy, during the 6 month time period **Denominator** – Number of patients discharged with a diagnosis of CHF and who have no contraindications to use of beta blockers, during the 6 month time period	• Rationale • Reporting period • Inclusions/exclusions • Data cleaning rules • Definition of terms • Background, providing evidence base and references

In the early years of the program the ACHS received quantitative and qualitative data, the latter allowing it to determine the HCOs' responses to receiving aggregate and, in particular, peer comparative data. Responses could be classified into five groups:

- review of data accuracy e.g. a further internal audit
- policy and procedure changes e.g. a change in antibiotic prophylaxis
- education programs e.g. on thromboembolism prophylaxis
- new appointments e.g. a discharge planning officer
- equipment changes e.g. new type of catheter etc. [3]

Surveys of HCOs in 2014 and 2015 revealed that the above five types of response are still occurring.

Changes in clinical practice

Trends can be demonstrated in the ACHS national clinical database showing that HCOs appear to be responding to a review of their results and are improving the care provided. Of 197 CIs available for trending in the 2014 data, over 50% showed a trend in a desirable direction and in five of the indicator sets more than two-thirds of all their trended CIs showed improvement. [1] Analysis of 2015 data had not been completed at the time of submission of this paper.

CIs certainly reflect changes in patient management, for example with a CI requiring patients admitted with an acute myocardial infarct (now termed acute coronary syndrome), to receive thrombolysis within one hour, the compliance rate rose from 70% on its introduction to a maximum of approximately 80% in 2008, but steadily fell from that year to approximately 60% in 2014, due to the development of early percutaneous coronary intervention (PCI). This CI will remain for HCOs without PCI facilities and those with them will address the 'door to balloon time'.

However, that the introduction of a CI has affected change and not simply reflected it, is suggested with the CI addressing the compliance rate in the provision of antibiotic prophylaxis for caesarean section. This was below 60% in 2008, when the CI was introduced, and rose to over 90% by 2012, a level that has been maintained since. This early 'slope of improvement' can be demonstrated with many of the CIs. Some other examples of statistically significant improvement over time in patient care are shown in Table 1, which lists the aggregate rates reported in 2007 and 2014 for seven CIs, which, having not been revised over that period, can be compared. The 2014 denominators for these seven CIs varied from approximately 11,000 patients (from 20 HCOs) for the Hospital in the Home CI to over 445,000 patients (from 144 HCOs) for the Emergency Medicine CI.

Cost-avoidance can also be shown, for example with the generic CI 'Unplanned Readmission'. The rate in 1998 was approximately 2.2% and in 2014 it was 1.17%. The cost avoidance (through the decreased rate) for the year 2014 would amount to over $200 million. Whilst fewer HCOs reported data in 2014 than in 1998, there was a 40% increase in the number of patients in the denominator (over 3.25 million) for 2014. In addition to improvements in medical and nursing practice, which would have occurred over that time, it is also likely that the introduction of the unplanned re-admissions CI had some influence through the action taken by HCOs of employing nurse discharge planners.

Clinical Indicator revision

As medical care evolves and improves one constant challenge, from the program's inception, was ensuring that the CIs remained current and that the support and participation of clinicians were maintained. An example of the need for currency is the thrombolysis vs PCI issue mentioned above. Much time, effort and funding have been

Table 1. Comparison of Selected CI data from 2007 and 2014

INDICATOR SET	CLINICAL INDICATOR	2007 RATE	2014 RATE*
Emergency Medicine	ATS Category 2 patients attended within 10 minutes	74.7	80.5
Gynaecology	Unplanned blood tranfuion with gynaecological surgery for benign disease	1.3%	80.5%
Hospital-Wide	Significant adverse blood transfusion events	0.27%	0.18%
Hospital in the Home (HITH)	Patients having 1 unscheduled staff callout	1.38%	0.54%
ICU	Adult patients transferred to another facility due to bed unavailability	1.28%	0.77%
Infection Control	Combined superficial and deep infection following hip prosthesis procedures	0.89%	0.47%
Mental Health Inpatient	Inpatient discharged on > 3 pychotropic medications	9.79%	4.1%

*All 2014 rates shown differ significantly from those for 2007

directed at periodic revision of the CI sets, such that nine sets are in their fifth or more version and the first set introduced, the Hospital-Wide CIs, is in its twelfth year. The revisions are now performed by relevant multidisciplinary working parties plus a consumer, and still require approval by the relevant Medical (and Nursing) College or Society before their adoption. Unfortunately, despite ACHS efforts, the Surgical set of CIs was not revised for over a decade [4] and the Royal Australasian College of Surgeons is now more supportive of national audits conducted in specific disciplines, such as vascular surgery. Some of the Surgical CIs are able to be addressed in the Hospital-Wide set, for management of patients undergoing complex procedures, such as coronary artery grafts, is essentially multidisciplinary. Data on 21 CIs (across three CI sets) reflecting surgical practice will continue to be collected.

If an external audit replaces a CI process, an accrediting body should be reassured when surveying an HCO that audit information would be:

- current and available at the time of survey
- inclusive of relevant providers in the HCO being surveyed
- cover the majority of procedures performed in a particular time frame
- contain morbidity and mortality data relevant to the HCO
- enable comparative data review with peer HCOs.

In its inaugural year of 2010 the Australasian Vascular Surgical Audit captured 65% of procedures performed. [5] For elective open repair of an abdominal aortic aneurysm there were 573 procedures reported with an in-hospital mortality of 2.4%. The ACHS data reported 696 procedures in the same year with a mortality rate below 2%. [4] It had been just over 3% for the previous decade and it is likely that the fall was due to the inclusion in the ACHS data of some percutaneous repairs, as the requirement that only 'open' repairs are reported has just recently been included in the ACHS CI. This is another example of the constant need for CI revision.

Data accuracy

Accuracy of the ACHS CI data has been addressed previously. [6] Occasionally a published study provides an opportunity for comparison of results, as with a recent report on mortality related to after-hours discharge from an intensive care unit, which is also an ACHS CI, using the Australian and New Zealand Intensive Care Society (ANZICS) Adult Patient Database (APD). [7] The mortality rates obtained in each database differed only slightly, being 15.4% for the years 2005-2012 in the ANZICS APD and 15.9% for the years 2007-2013 in the ACHS database. The ACHS had no comparative data for the period 2005-2006 as the CI was only introduced in 2007, so the time periods could not be exactly matched.
It is important to recognise that the ACHS CI program is one of review and not research.

When a review program flags a problem and the cause is evident a recommendation can be made and a further review subsequently conducted. If the cause is not evident then a research project can be mounted, with the extra

resources required in terms of personnel, time and funds to obtain data on every possible event, with the expectation of then determining a cause.

Outliers

Participating HCOs receive reports identifying areas where their rates differ significantly from the overall rate, i.e. where they are outliers. In 2014, as in previous years, such outliers occurred in all sets, with only around 25% of HCOs having none and 50% having both desirable and undesirable outliers. Those HCOs that report on fewer CIs have fewer outliers.

Thus the CI data aught not be used for 'League Tables', but are best used for internal reviews, which HCOs are expected to undertake.

Programs in other countries

Clinical Indicator programs have been established in North America, the United Kingdom, Europe and Asia. The list of individual countries with such programs continues to grow, confirming the value placed on CIs by healthcare bureaucracies world-wide. In the United States the Joint Commission introduced CIs into its accreditation program in 1999, having first outlined the concept in its 1987 policy 'Agenda for Change'. As with the ACHS there has been constant revision of its CIs. Currently there are 14 sets of core measures from which North American HCOs are expected to choose the measures they will address, and their reported data may be made public. [8] Other early and quite comprehensive programs were developed in Scotland, in 1993 [9] and Denmark in 2000. [10]

Other Australian programs

A further challenge for the ACHS is that its CI program remains a requisite for ensuring a high quality of patient care, as clinical performance measures are developed by various other Australian healthcare authorities. The Australian Commission on Safety and Quality in Healthcare has recently produced a set of hospital-based outcome indicators addressing inhospital mortality, re-admissions and hospital acquired infection. [11]

Whilst much information for these indicators can be obtained from administrative databases, they are limited in relation to knowledge of illness severity and preventability. For example a re-admission to hospital might be recognised as unplanned, but not that it was unexpected. This is an important advantage of the ACHS national clinical database, for not all of the apparently failed processes of care or untoward outcomes will be avoidable.

Have the ACHS CI program's aims been met?

As stated above, improvement in the quality of care can be demonstrated in the high number of desirable trends evident in the ACHS CI database. Indicators, such as the requirement to conduct a clinical review of obstetric adverse events, which has risen from approximately 50% of cases in 2009 having a review to 100% in 2014, along with the limited amount of qualitative data the ACHS receives, suggest that there is strong clinician interest in quality activities. A recent online questionnaire and phone interviews concerning the use of Day Patient CIs also confirmed that CI data are presented regularly to senior clinical and administrative staff and acted upon to improve patient management. [12]

Although there is no incontrovertible evidence to indicate that the likelihood of an HCO with inadequate patient management processes and outcomes being accredited has been lessened, significant advances in accreditation survey processes, including the requirement for HCOs to demonstrate evidence of improvement in patient management and outcomes, has significantly reduced such a likelihood.

The extensive coverage of clinical activities reflected in the ACHS CI sets, and the important provider input in their development and revision, should ensure their continued use and influence in assessing standards of care in Australian HCOs and, most importantly, in providing a stimulus to improvement in that care. Brand et al reporting on a survey of Australian public hospitals conducted in 2005, found that 99% of the hospitals surveyed measured clinical performance, with 72% using CIs to do so. [13] Presumably the majority of the CIs used at that time were from the ACHS program. However, only a brief reference to one ACHS CI was made in a *Medical Journal of Australia* supplement in 2010 devoted to the gathering of clinical information to improve care. [14] There is clearly a challenge for the ACHS in the promotion of its unique national clinical database. It is now developing as an international database, with the recent participation of Hong Kong, Indonesia and Saudi Arabia in addition to New Zealand, although the number of HCOs participating from those countries remains small at this stage.

Given the amount of data and information available to HCOs today, the ACHS aims to ensure its data are easily interpreted, supported by healthcare personnel experienced in quality assessment and most importantly, are used by HCOs as a critical element to improve patient outcomes. As the great Dr W Edwards Deming wrote 'There is no substitute for knowledge'. [15]

Acknowledgement

The ACHS gratefully acknowledges the input of the past and present `chairs' and members of the many CI Working Parties in the initial development of each CI set and each subsequent revision.

Competing interests

The authors declare that they have no competing interests.

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RESEARCH ARTICLE

Developing and Implementing a Framework for System Level Measures: lessons from New Zealand

F Doolan-Noble, M Lyndon, A Hill, J Gray and R Gauld

Abstract

Background: Measuring performance is now the norm in health systems. System Level Measures (SLMs), implemented at New Zealand's Counties Manukau Health (CMH) are designed to support quality improvement activities undertaken across the health system using only a small set of measures. While the healthcare and performance measurement literature contains information regarding the facilitators and barriers to quality improvement initiatives, there is an absence of studies into whether these factors are germane to the establishment and implementation of a SLM framework.

Methods: A purposive sample of thirteen senior managers and clinicians involved in the construction and implementation of SLMs were invited to participate. Semi-structured telephone interviews were completed and recordings transcribed verbatim. Transcriptions were thematically analysed using a general inductive approach.

Findings: In total, ten interviews took place. Six facilitative themes were identified including: dispersed and focused leadership; communication; data; alignment of the measures with organisational strategic data; alignment of the measures with organisational strategic plans and values; stakeholder engagement; and a dedicated project team. Conversely, five themes were identified that hindered the process. These were: reaching consensus; perfection versus pragmatism; duplication and process burden; achieving buy-in and workload.

Discussion: The factors that facilitate and hinder establishing and implementing a framework of SLMs are common to other quality improvement approaches. However, this study demonstrated that these factors were also germane to SLMs. These findings are of particular relevance as researchers and policy makers elsewhere increasingly aim to adopt measurement arrangements for health systems that address equity, safety, quality, access and cost.

Abbreviations: CMH – Counties Manukau Health; DHB – District Health Board; IHI – Institute for Healthcare Improvement; QI – Quality Improvement; SLM – System Level Measure.

Key words: health systems; quality improvement; system level measures.

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Background

The context for most healthcare systems in many developed countries is one of fiscal constraint but also of improving service integration, quality and performance. This article discusses the practical experience of developing and implementing a multidimensional framework of System Level Measures (SLMs), designed to support quality improvement within the context of a district-wide health system in New Zealand. By providing a description of factors that assisted and hampered the development of the framework, the article fills an important gap in relation to the use of SLMs in healthcare. Currently, there is only a limited body of SLMs related healthcare literature published, consisting of a report outlining the design principles behind SLMs, [1] and a paper examining the process of their development and implementation. [2] However, a report by Hibbert and colleagues does provide some useful information regarding the use of performance indicators within local health systems, albeit with a focus that is not specific to SLMs or their development. [3]

SLMs implemented at New Zealand's Counties Manukau Health (CM Health, a public hospital and health services provider, described in more detail below) are based on a framework developed by the Institute for Healthcare Improvement (IHI). [1] SLMs are intended to assist organisations to monitor their own improvement efforts towards achieving the IHI Triple Aim of improved service quality, with a focus on population health and consequent reduced healthcare spend. [4] In the case of CM Health the SLMs also align with their six 'executable strategies' (better health outcomes for all; first do no harm; system integration; ensuring financial sustainability; enabling high performing people; delivering patient and whānau centred care[A]) that are designed to support their journey towards achieving the IHI's Triple Aim. [4] SLMs provide data that:

- Demonstrate the longitudinal performance of the system;
- Enable the organisation to see how it is performing in relation to strategic plans for improvement;
- Facilitate comparisons with similar organisations; and
- Inform quality improvement planning. [1]

In theory, SLMs comprise a small set of measures [1] that bridge traditional intra and inter-organisational boundaries and support quality improvement to take place within the global context of a health system. [5] While SLMs also support performance management they differ due to a focus on measuring the performance of a whole system and the contribution of its various parts, including hospitals and primary care services, to the overall performance of that system. Performance measurement, in contrast, focuses on performance within a single organisation, such as a hospital. [6] In addition, SLMs are recognised as supporting integration within health systems and progressing health reform toward integration over time. [3] This is potentially because the contributory measures that inform the SLMs relate to different parts of the system. Moreover, it is conceivable that the use of SLMs encourages everyone to become involved in quality improvement (QI), as contributory measures are designed to measure activity that those at the frontline of clinical and service delivery consider relevant and which they can influence.

Limited health service-specific research has been undertaken to untangle factors that enable or constrain the development and implementation of a SLM framework. Kolberg and Elg identified four key challenges specific to developing performance measurement systems: reaching consensus around the measures to be used; maintaining competence in a wide range of fields within the project team; accepting scrutiny and critique of the project; and clarifying the end users of the system and determining their varying needs. [7] Additional barriers cited in the literature include a lack of dedicated human resources with the suitable skills to identify the appropriate measures and their related true drivers; the inflexible nature of information systems which, in healthcare, are frequently designed to enable the collection of administrative and clinical data and not necessarily constructed to report on performance measures; a focus on perfection which can stymie success, as can lack of staff engagement; and misjudging the time and expense required for development. [6,8,9] Whilst there are clearly challenges associated with the development of such measures, there are also some recognised enablers. Leadership [9] and leadership distributed across the different levels of an organisation appear beneficial. [10] Acceptance of measurement throughout an organisation and the mapping of measures to an organisation's strategic objectives and its priorities and values are also recognised as enablers. [6,8]

Dixon-Woods and colleagues highlight factors that can impact negatively on the sustainability of QI initiatives. [9] These factors include treating QI initiatives like a project with a beginning and an end, meaning the need to embed

[A] Whānau centred care refers to care that is grounded in Māori culture and takes a holistic approach to improving the wellbeing of whānau (families) and addressing the needs of individuals within that whānau.

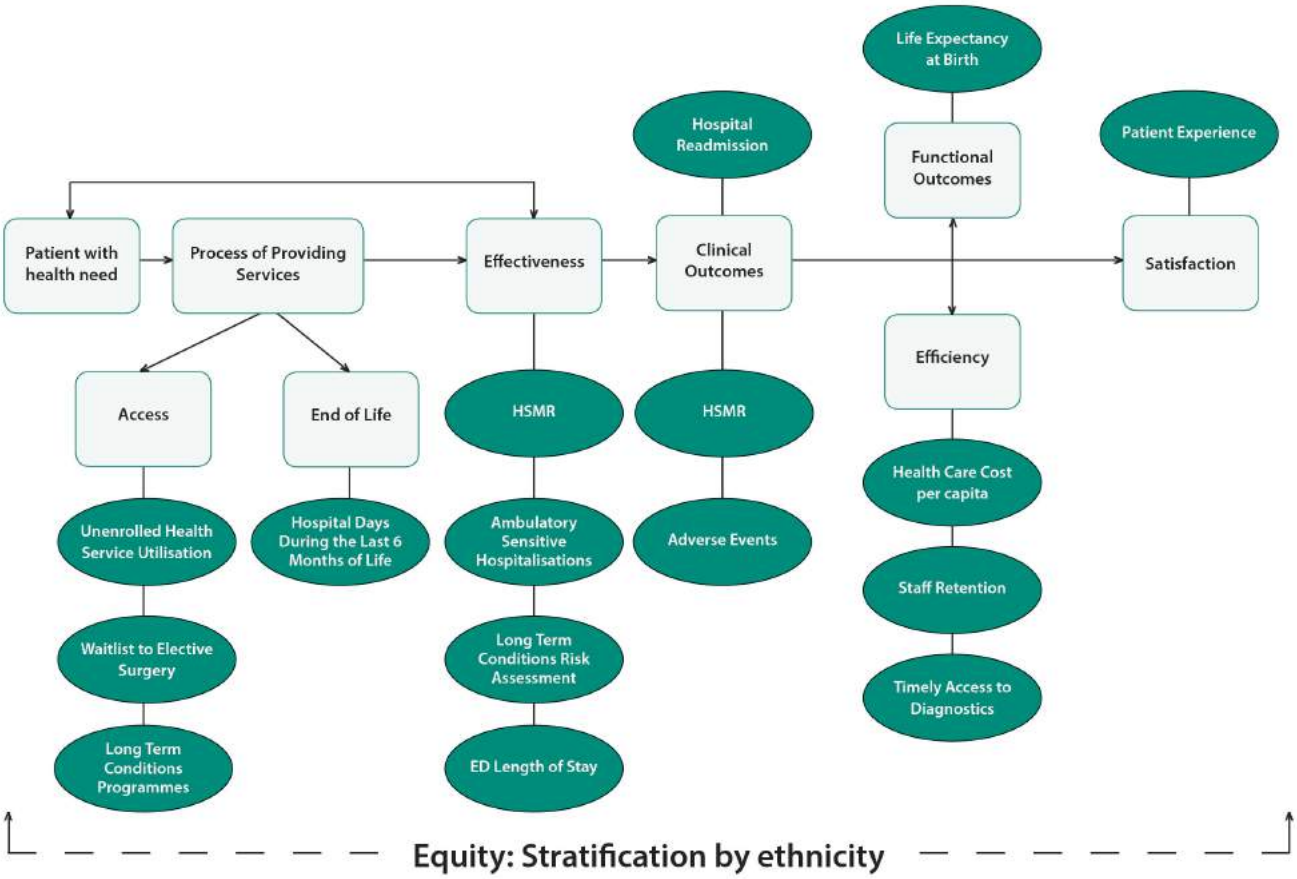
processes is limited and even missed; over-reliance on certain individuals; underestimating the need to be explicit about the intent of the measurement intervention and failing to demonstrate the relevancy of the QI activity. [9]

Study setting

In New Zealand, there are twenty publically funded District Health Boards (DHBs) created in 2000 by the *Public Health and Disabilities Act*. [11] The DHBs are each responsible for funding and providing public hospital and other healthcare services for a geographically-based population, including primary care and disability support services. CM Health is one of three DHBs in the most populous region of New Zealand, the Auckland metropolitan area, and services a population of approximately 500,000 people. The CM Health population is characterised by its youthfulness, high numbers of Māori, Pacific and Asian peoples and by high rates of deprivation. [12] In common with other DHBs in New Zealand, and with international trends, CM Health also has an ageing population and increasing rates of chronic illness. Consequently, as a funder and service provider, CM Health faces multiple challenges driven by its population's profile. [12] These challenges and the focus on building a cohesive district health system underpinned the need to have a system of measures in place to determine the performance of the healthcare system, as well as opportunities for improvement. In addition, the aspirational goal set by the CEO of 'being as good as or better than comparable health systems anywhere in the world and beginning with being the best healthcare system in Australasia by December 2015', also required the establishment of a measurement framework.

To this end, CM Health commenced a phased process of developing a set of SLMs late in 2013 when a team was established to facilitate their development and implementation. The team comprised the following roles: SLM champions who were senior leaders who advocated for the incorporation of the SLMs into the health system; SLM coordinators who facilitated the compilation of the drill downs into the contributory measures (measures that influence a SLM) by managing the flow of communication and data required to complete a drill down (a drill-down is a report containing data which presents an organisation's

Figure 1: CM Health System Level Measures (System Level Measures are in dark blue ovals)



Adapted from the Institute of Healthcare Improvement Whole of Systems Measures. [1]

performance for a selected SLM); a data analyst who had access to the data warehouse and analysed and presented the data in the drill downs and a quality improvement advisor who was an expert in analysing data and interpreting special cause variation to assist with the correct interpretation of the data. In addition, there was a SLMs Advisory Group comprising the head of Health Intelligence, Director of Allied Health and the two SLMs coordinators.

Some of the final group of SLMs agreed to by CM Health were pre-existing measures, although not previously used in the context of whole of system measurement, while other measures were agreed upon specifically for the SLM framework. The end result, finalised in 2014, was a suite of 16 SLMs (figure 1) that conceptually are similar to those used in other healthcare organisations, such as Sweden's Jönköping. [13]

This suite of measures is now live and is providing CM Health with a lens on quality of care, access, efficiency and health equity. Furthermore, SLMs are now influencing wider health policy within New Zealand.

Methods

As our aim was to understand the experiences of those involved with the development and implementation of the SLMs, a qualitative approach using semi-structured interviews was adopted. [14] A purposive sample [15] of thirteen senior managers and clinicians involved in the construction of the suite of SLMs was identified. All had involvement in the work either through their role on the developmental group, or in their capacity within the Clinical Governance Group or the Executive Leadership Team of CM Health. Invitees represented the spectrum of services provided by CM Health: population health, and primary and secondary care.

Participants were emailed an information sheet and consent form. [16] An interview schedule was developed to guide the semi-structured interviews; [14] these took place after the SLMs were implemented. All interviews were undertaken by one of the authors for consistency, recorded digitally and transcribed verbatim. Transcriptions were read by two of the authors and thematically analysed using a general inductive approach, [17] as the aim of the analysis was to determine if themes were evident in the interview data, not to answer an a priori question, as this is a relatively unexplored area in health services literature. The research protocol for this study was reviewed and approved by the University of Otago Human Research Ethics Committee, reference number D14/314.

Findings

Of the thirteen personnel invited to participate, two declined and one failed to respond. Analysis of the narratives revealed key factors that facilitated the development and implementation of the SLMs framework, as well as challenges to be negotiated. These are illustrated in Table 1.

Facilitators

Leadership

The leadership shown by the CEO was identified as vital. Interviewees felt he made tangible the aspirations of those working in the organisation when he set the goal of being the best healthcare system in Australasia by December 2015. By articulating this goal, he gave impetus to the need to establish a framework for measuring system performance and improvement. In addition, interviewees valued the leadership shown by the leader of the SLM initiative, *'Absolutely the right person to go forward with it (the initiative)'*. The engagement of one of the clinical leaders within the organisation to work alongside the project team was viewed

Table 1: Factors that enable and constrain the development of SLMs

ENABLING FACTORS	RESTRAINING FACTORS
Leadership, including distributed leadership	Reaching consensus
Communication	Perfection v pragmatism
Data	Duplication and process burden
Alignment and ownership	Buy-in
Stakeholder engagement	Workload
Project team	

positively, '*I think it was really good having XX as the Clinical Champion because he could open lots of doors because of his clinical reputation*'. Having the guidance of a senior manager who had established a similar system elsewhere was also judged beneficial. The distributed leadership provided, therefore, gave direction strategically, theoretically, clinically, experientially and from a project management perspective.

Communication

All interviewees were very clear about the rationale for establishing the SLM framework. This was viewed as enabling various activities underpinning improvement, such as benchmarking, as opposed to judgement, which can be counterproductive. They also considered it provided a mechanism for assessing progress towards the IHI Triple Aim [4] which the organisation uses to guide its planning process. Participants believed the SLMs assisted in monitoring progress towards the goal set by the CEO and could potentially facilitate comparisons with other health systems, nationally and internationally.

Data

The routinely collected data, which were repackaged to inform the reporting on SLMs, were seen as a key facilitator and viewed as a 'can-opener'. Interviewees spoke of the data, *'prompting conversations and debates that otherwise would not have occurred'; 'forcing you to look at the whole system'* and '*making sense of the multiplicity of activities that take place within a health system*'. The data that underpin the SLMs and form the contributory measures were also deemed significant:

> *'After defining some system level measures actually building the conversations around the contributory measure we sparked really important discussions. It starts to drive at what the logic is behind our measurement and our improvement'.*

Alignment and ownership

The importance of the SLMs aligning with CM Health's six executable strategies was also articulated, as a facilitator, as was having ownership of the measures. The latter was considered important as it enabled the organisation to, 'identify our own priorities and our own opportunities for improvement', as well as providing 'the ability to reflect on ourselves'. In New Zealand's government-funded health system this was considered preferable to the many measurement demands predetermined by the Ministry of Health. [18]

Stakeholder engagement

The project team considered it important to have broad stakeholder engagement: for example, 'we worked across different teams to enable them to propose measures'. They reported back on proposed measures and contributory measures and presented the various teams with information regarding how their proposed measures functioned. This level of engagement was seen as not only facilitating the development of a robust framework but also assisting with the implementation and utilisation of the framework once it became active. One interviewee summed up the engagement process as follows: *'You'd have to say it was a successful engagement process as the whole thing has been implemented'.* However, the project team acknowledged that the effort required to engage with a range stakeholders was considerable, *'. . . there is a lot of hard work, the engagement stuff, a lot of hard work'.* This in part was driven by the need to expand their stakeholder consultation due to the interest shown by many people in having input into the initiative.

Project team

The final facilitator acknowledged by interviewees was the presence of a dedicated project team. Interviewees recognised the initiative required a huge effort by the team, *'That puts a lot of work on the system level measure people as opposed to anybody else doing any of the work'.*

Challenges

Reaching consensus

Certain factors were identified as hampering the establishment and implementation of the SLMs framework. At the development stage, reaching consensus was a cause of tension:

> *'There was a lot of appropriate fighting over inclusion and exclusion'. As a result, the initial plan to have twelve SLMs expanded to sixteen because 'there was the argument that we were not representing primary care enough'.*

However, one interviewee summed it up:

> *'Well the biggest problem's been people having their own agenda. They're not really understanding what they're all about. So if people sort of think we need the primary care measure they're not really understanding what the point of the big dot is. Primary care is plainly a feature of the organisation, but you know, aspects of it are just feeders to a big dot. Umm, you know nothing in an organisation should really exist in isolation'.*

Perfection versus pragmatism

Friction arose around the desire to establish a perfect set of measures and contributory measures versus taking a pragmatic, 'this is good enough' approach, as described by one interviewee:

> *'The huge challenge that came through all the time was a desire to make these perfect before we engaged in any*

further exploration and I know that um, I pushed very, very hard to get things on the table even if they weren't perfect'.

Many of those engaged with the development of the measures were accepting of this approach as it allowed for an area of interest to be acknowledged, for example, patient experience of care, even if appropriate data was lacking, therefore, limiting the usefulness of the measure in the interim.

Duplication

Duplication was another hurdle. Some measures already existed on other performance monitoring dashboards. Participants pointed out that the timetables of the different reporting requirements frequently did not align, resulting in process burden as another set of reports had to be generated and another set of analysis undertaken. The need to generate different reports for the same measures was driven by variations in definitions, denominators and numerators dependent on who the report was for.

Buy-in

Achieving buy-in was another challenge, 'that we probably got wrong initially'. Those involved in the stakeholder engagement felt that there was an initial underestimation of the number of people who wanted to be involved. Consequently, a wider engagement approach was instigated.

Workload

The final challenge was the workload associated with the SLM development and subsequent implementation. One participant pointed out that the work involved more than just determining, developing and assessing the appropriateness of a series of measures. It also included communication, reporting and associated work, such as, data analysis. Due to the newness of this approach, roles and responsibilities were perhaps not clearly defined, leaving the project team unsure about the parameters of their work:

'I said maybe we aren't able to do that, maybe our audience are the executives and boards and clinical governance and maybe it is for them to push it through, you know'.

The formative stage of the process including the need to have a project plan documented, appropriate resourcing estimations carried out and a business owner identified for the initiative was recognised as a key area for improvement.

Discussion

Several factors that enhanced but also hindered the development and implementation of SLMs within a health system were identified by participants in this study. Many of these factors have been reported elsewhere in the healthcare and performance management literature in relation to QI. [19-26] This study, however, illustrates their relevance in the context of SLM development and implementation. Leadership, not just that of the CEO was seen as crucial to the development and implementation process associated with the SLMs. The goal set by the CEO was seen as prioritising QI initiatives and spurring senior management to tackle the tasks ahead. In turn, the distributed model of leadership associated with the SLMs provided direction, promoted alignment and fostered commitment, factors recognised as key for improvement. [27,28] The broader New Zealand health policy emphasis on leadership may have assisted CM Health, in that government, since 2009, has worked to support leadership development especially amongst health professionals. [29] The impact of this has varied amongst the 20 DHBs. [30] A key difference in the case of CM Health may well be a focus on developing leadership across the organisation and, in particular, on gaining broad commitment to the SLMs developmental process amongst managerial and clinical staff.

Data were both an enabler and an obstacle. Data were viewed as initiating conversations or, as one interviewee phrased it, the 'can-opener' during the developmental phase. As a result, the conversations and debate prompted questions, enhanced the understanding of the system as a whole, and altered the way people assessed problems. While the data, and the discussions and debates generated, were viewed as pivotal to the development of SLMs, processing and interpreting the data were viewed as resulting in duplication and, as such, producing an increased burden on some staff. This had the potential to derail the SLM development process. Arguably, the cross-organisational leadership and buy-in to SLMs created a momentum that countered this possibility.

Overall the narratives revealed a sense that the health system had been 'unlocked' by the provision of the SLMs and their contributory measures, resulting in a greater awareness of how the system that is CM Health functioned as a whole which, of course, is an implicit aim of whole system measurement. In other words, the data and discussions that took place throughout the development of the SLMs framework appeared to enable those involved with the initiative to 'make sense' of their health system. It helped them develop a shared understanding of how different components within the structures that underpin activity within the organisation all interrelate. Furthermore, the conversations promoted collaborative cross system thinking, as opposed to thinking in competitive service delivery silos.

Thus, conversations, recognised as pivotal to 'sensemaking', [31] were integral to the process of developing the SLMs by engendering a greater appreciation of how the components of the system interconnect.

When asked about the benefits of the SLMs many interviewees spoke of the advantage of the measures being owned by the organisation, instead of being externally imposed which can lead to various levels of gaming and goal displacement. [32] Interviewees saw the SLMs as providing opportunities for reflection, generating a sense of accountability, and providing a sense of relevance to the organisation.

The use of a project team comprised of individuals who were highly regarded by the various stakeholders to generate buy-in and commitment was another enabler identified, with functional similarities to the 'knowledge broker' role reported elsewhere. [33] Interviewees noted the importance of making the time for project leaders to work on engaging and involving different teams in the developmental process, depending on the SLM in question. Critical to this was the role of clinical leadership, which, as noted was pivotal to building legitimacy of the project amongst front-line practising health professionals. Conversely, the time required for stakeholder engagement was a key challenge, as is often the case with initiatives that are additional to healthcare delivery, which is the primary focus for health professionals.

Essentially, the development of SLMs as a contribution to improvement efforts takes time: time for stakeholder engagement; time to debate the suitability and relevancy of various performance measures; time to determine the true drivers of performance measures (the contributory measures); and time to undertake analyses and develop reports. In addition, knowing who to engage with internally within the organisation was identified as a problem, partly driven by the uniqueness of the initiative and hence a level of unfamiliarity regarding who to engage with. Having a team to manage not only stakeholder engagement but all the other associated tasks was considered important by those interviewed, as found in other studies of cross organisational initiatives. [33-35]

Reaching consensus on the SLMs was recognised by several interviewees as a difficult process, causing tension and frustration. This was partly driven by confusion regarding the nature and functions of SLMs and the desire by various participants for the measures to reflect their specific area, as opposed to the broader health system. The desire for a perfect set of measures and ancillary contributory measures versus the desire to action the measures and modify them as issues emerged was an additional cause of friction.

The workload associated with the initiative was viewed as challenging by those intimately involved in its day-to-day facilitation. It appeared that the scope of the work and the changing skill set required, as the initiative evolved was not fully recognised at the outset. Consequently, the initiative leader was required to undertake functions which would normally be part of the role of other contributors meaning there was some propensity toward work intensification, shown elsewhere to be associated with improvement activities. [36]

The limitations of this study need acknowledgement. First, although interviewees spanned clinical and managerial roles, no one specifically representing population health at CM Health participated in the study. While a population health perspective is not necessarily the exclusive domain of the public health specialists, a population health perspective on the SLMs chosen and the process undertaken, which might differ from the views expressed by the clinicians and managers, is missing. Similarly, no one from the health intelligence and informatics team was interviewed, meaning the challenges described in this study related to data extraction and analyses are possibly understated. Second, as with any qualitative study, the data reported here are reflective of a small number of interviewees. [37] While saturation was reached in the interview process and there is no reason to believe any interviewee misrepresented the reality, there are potentially restrictions on the extent to which the findings could be translatable into other settings. [38] Third, three of this article's authors (ML, JG and AH) also participated as interviewees. While it could be considered that there is an element of conflict of interest in this, as noted, all interviews and thematic analyses of interview data were undertaken by two of the authors (FD-N and RG) with all transcripts and interviewees anonymised. The findings were discussed with the interviewee authors who provided assistance with interpretations. Final analytical and editorial decisions on material and discussions in this article rested with FD-N and RG.

SLMs are going to be developed by all of New Zealand's DHBs, [18] yet, as noted in this article, there remain challenges with implementing the approach. Set within the context of a New Zealand DHB, this study has identified factors that enable and hinder the development and establishment of a framework of SLMs. These findings are particularly relevant as researchers and policy makers elsewhere increasingly aim to adopt measurement arrangements for health systems

that address equity, safety, quality, access and cost. [39] Very importantly, this study revealed the importance of a coming together of two streams of activity which, in the CM Health context, were pivotal to successful SLM development: the technical element of designing the measures and their contributory measures; and the leadership and organisational components required to ensure their establishment and implementation.

Competing interests

The authors declare that they have no competing interests.

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RESEARCH ARTICLE

Making Hospital Governance Healthier for Nurses

K Clark and S Beatty

Abstract

The current research examined front line nurse expectations of non-metropolitan public hospital governance. In doing so, it explored the relevance of two dominant, competing Agency and Stewardship governance theories to these organisations.

Two studies were conducted with the first establishing an inventory of notional nurse preferences for governance and the second testing these with a random sample of front-line non-metropolitan hospital nurses across one Australian State, with the aim of identifying valid and reliable measures.

The study data suggest nurses working in non-metropolitan public hospitals expect governance practices to reflect: respect for and engagement with clinical perspectives; utilisation of evidence-based planning; and effective engagement with local communities. Scales with good consistency and criterion and construct validity measuring these three components were identified.

The study provides evidence that nurses expect and value a style of hospital governance that is consistent with Stewardship Theory. The results also suggest that governance is an important enough issue for nurses that it significantly affects their turnover intentions. This has important implications for healthcare leaders concerned about the sustainability of public hospitals.

Abbreviations: **NPM – New Public Management; PCA – Principal Components Analysis.**

Key words: **nurses; managers; hospitals; governance.**

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Introduction

Public hospitals account for the majority of acute-care provision in Australia and consequently play a critical role in the nation's health system. [1] Issues that affect the satisfaction and retention of clinical staff in public hospitals are therefore matters of considerable concern.

The Australian Productivity Commission [2] identified high levels of early-career departure from the health professions, pointing to hospital environments as an important area for research into clinician satisfaction and retention. In these settings, relationships between managers and clinicians are critical, because as Blaauw, Gilson, Penn-Kekana, and Schneider [3] argue, they are the vehicle by which organisational outcomes are realised in healthcare. Foundational influences on manager-staff relationships are located in the domain of governance. Fukuyama [4] interpreted good governance as requiring appropriate levels of *agent* (i.e. staff) autonomy for decision-making to be ascertained. To do this, managers need to make accurate judgments about their staff's motivations vis-à-vis their work. As Fukuyama indicates, this is not always easy and what is appropriate in one setting could be counterproductive in another.

Two theories have come to dominate the question of the appropriate levels of agent autonomy. [5] *Stewardship Theory* makes room for higher levels of autonomy, because it posits in agents the potential to share common interests and to have the desire to cooperate with their principals (i.e. managers). [6] In doing so, this theory fits with Fukuyama's view that governance needs to be tailored to its context. [4] The alternative and more influential *Agency Theory* assumes governance always entails conflicting interests among principals and agents [6] and suggests there needs to be

a focus on controlling the propensity of agents to behave according to self-interest.

Notwithstanding Fukuyama's [4] contention of the need to match governance to settings, recent decades of public sector reform both in Australia and elsewhere have been singularly underpinned by New Public Management (NPM). NPM has situated Agency Theory as a cornerstone influence on public sector governance. Reflecting its reach into public hospitals, Degeling and Carr characterised pre-2000 Australian health reforms as occurring with 'little examination of the attitudes, values and beliefs of those subject to the reform process' [7 p. 403]. Subsequently Newman and Lawler [8] referred to the dominance of governance oriented to measuring clinical output and to controlling clinicians' performance.

Empirical data on the general veracity of such claims has been a gap in Australian health sector research. There is some historical data from the 1990s relating to the initial influence of NPM. Drawing on studies that involved almost 30,000 Australian employees in roughly 3,000 public and private sector workplaces [9] this provides empirical support for claims of declining concern with front-line perspectives in the public-sector in the early period of NPM. These data don't, however, shed light on whether the change had been beneficial to public sector performance nor do they address whether the change had negatively affected staff. Fukuyama's assessment suggests the answers to these questions would be *'it depends on the setting'.* [4]

Reflecting the triple themes of: (a) a need for context-specific governance data; (b) concerns about high levels of early-career departure from the health professions; and (c) the importance of hospital environments as foci for research into clinician satisfaction and retention, the current study investigated nurses' perspectives of governance in a number of Australian non-metropolitan public hospitals.

The centre-piece of the study was the modest but important goal of identifying signs of the appropriate theoretical alignment of hospital governance insofar as nurses were concerned (i.e. Agency or Stewardship Theory) and assessing whether this seemed likely to make a difference to hospital functioning. To do this, two studies were undertaken culminating in the construction of nurse governance preference scales and assessing these against an existing scale that measured nurses' turnover intentions.

The approach taken followed standard conventions of scale development, complementing use of literature, and qualitative research to generate items followed by a survey. [10] The governance scales developed were interpreted as reflecting nurses' psychological constructions of governance preferences. [11] The analytical approach taken accorded with literature on the development of instruments with this focus. [12]

While nurse work motivations have been little researched [13] there are reasons to suspect it might resonate with the assumptions underpinning Stewardship Theory. These afford agents the potential to have higher-order concerns than self-interest, to be pro-organisational, and trustworthy. [14-16]

At first glance, there might be a temptation to consider clinicians' expectations of governance a second-order priority in hospital settings. An alternative interpretation, however, deserves consideration. In particular, it seems likely that the combination of professional training in healthcare and the character of hospital work instil clear expectations of good governance amongst hospital-based clinicians like nurses. [17] Violation of these seems likely to affect job attitudes and behaviours, [18] to be detrimental to organisational commitment and to lead to disinterest in anything beyond directly serving patients' interests. For these reasons, research into clinicians' expectations of governance is directly relevant to the critical issues of public hospital efficiency and effectiveness, which underpin sustainability.

Methods and results

This research comprised two studies both of which had ethics approval from the research ethics committee of Edith Cowan University (08-35 CLARK). The first study was a series of in-depth interviews with highly experienced senior public health managers. From these interviews, an inventory of 110 governance practices was constructed in the form of Likert scale items. This inventory was tested in a second study that was a cross sectional random sample survey of nursing staff working in non-metropolitan public hospitals across one Australian State. These included hospitals in large regional centres, mid-sized towns and smaller rural loccations. The following sections outline the methods and results from the two studies.

Method Study 1: Interviews with managers

Nineteen senior clinician-managers working in one State government health department and one former senior healthcare manager were approached to assess their willingness to participate in key informant interviews on governance in public hospitals. These 'expert opinion' interviews were used to establish preliminary or 'in-principle' clarification of the theoretical alignment of the governance

preferences of hospital nurses. Further to this, they were used to identify governance practices 'experts' believed frontline hospital nurses valued or expected.

Sixteen of the managers approached agreed to be interviewed and were available during the study period. Prior to interview, each was given a detailed outline of the nature of questions they would be asked (e.g. 'I'd like you to reflect on your views of the characteristics of effective non-metropolitan public hospitals. What attributes and practices would characterise the organisation's relationships with clinicians?'). Interviewees were assured of anonymity and each gave written consent to participate. Interviews were undertaken on a one-to-one basis using a structured open-ended questionnaire supplemented with probing to elucidate deeper reflections.

Most interviews were conducted by phone, with a small number undertaken face-to-face, and most were of approximately one hour's duration. Extensive notes were taken during interviews and these were subsequently used to extract themes and to build an inventory of governance-related behaviours or practices that respondents regarded as being associated with management effectiveness in non-metropolitan public hospitals.

Fifteen respondents were clinician managers, with ten having a background in nursing and five being medically trained. The remaining respondent was a former senior manager with extensive experience with a national healthcare management organisation and in hospital accreditation. Thus, all interviewees had extensive experience working with nurses in hospitals, with most having more than 25 years' health system experience along with clinical training, which was predominantly in nursing.

Results: Study 1

Interview data suggested respondents believed that hospital nurses expected governance based on a perception of shared employee-organisation commitment to a common aim and an agreement on mutual notions of fair treatment. The overwhelming perspective offered by interviewees aligned with Stewardship Theory. Interview data also resonated with Caldwell and Karri's [18] proposition that employer violation of nurses' governance expectations negatively affected their job attitudes. The effects suggested included lower levels of organisational commitment and a lack of interest in organisational imperatives beyond serving patients' interests. Interviewees generally contended that hospital governance should emphasise shared clinician-organisation responsibility for patient and population health.

A further issue that emerged from interviews was the proposition that nurses distinguished and often held different attitudes about governance pertaining to the different levels of the public health system (i.e. institutional, organisational, and work level). Local organisational or *'work-level'* governance was regarded as more important to nurses than the other levels.

Interviewee perspectives on work-level governance aligned with Clark and Payne's [19] characterisation of the categories or areas that influence whether staff trust their managers. These perspectives were:

- Integrity (i.e. sincerity, honesty, promise fulfilment);
- Competence (i.e. technical and interpersonal knowledge and skills);
- Consistent behaviour (i.e. fairness, predictability, good judgement);
- Loyalty or benevolent motives (i.e. based on shared values and goals, commitment to staff etc.); and
- Openness or mental accessibility or availability (i.e. willingness to share ideas and information).

Methods Study 2: Survey of Nurses

Study 2 drew on Study 1 data, entailing compilation of an 'expert-identified' inventory of nurse governance preferences. This was converted into a questionnaire format and tested and refined via a sample survey of public hospital nurses. The questionnaire included a section oriented to governance at the hospital level (79 items) and a section on broader or overall organisational governance. Local hospital items are the focus of the remainder of this paper.

A final section of the questionnaire comprised a 14-item *'intention to stay'* scale (i.e. measuring nurse turnover expectations). This was included for use in validating governance measures. Intention to stay was measured using a validated scale previously used in a study of the turnover intentions of South African hospital nurses. [20] Approval to use the scale was obtained from its author. A fourth section of the questionnaire included items of a demographic, work history and professional training nature.

As a preliminary check on design and item validity, a draft version of the questionnaire was sent to people interviewed in Study 1 and to academic colleagues. An accompanying request sought feedback on the appropriateness of items (wording etc), use of scales and on possible gaps in coverage. Suggested amendments were incorporated into the final draft of the questionnaire used in Study 2.

To facilitate Study 2, the employer public health organisation drew a simple random sample of 200 names and addresses of front-line hospital nurses from its employee database. One duplicate was subsequently found in the sample meaning the number of eligible nurses was 199. An outline

of the study and an invitation to participate in the study was mailed to these nurses. The letter advised that in light of anonymity of responses, completion and return of the questionnaire would be taken as consent.

One follow-up reminder was sent to all recipients two weeks after the initial mail-out. After removing four non-contacts relating to post office notification of relocation or returns marked *'on overseas travel',* the response fraction was 86/195 (i.e. 44%). This exceeded levels achieved in most surveys [21] and met Jackson and Furnham's [22] minimum level for survey acceptability (i.e. 35%).

Data were entered and analysed using a personal computer version of SPSS (SPSS15.0 for Windows). The analysis explored underlying patterns within responses and item performance. It also examined the correlation between responses and turnover intentions.

To explore patterns in responses to governance items, Principal Components Analyses (PCAs) were undertaken using Varimax (orthogonal) rotation. Tabachnick and Fiddell [23] recommended this approach as the appropriate first step in analysing data where the goal was reduction of items and exploration of probable factors. PCA component matrices were then assessed to examine individual item results and factor interpretability. An iterative cycle of removing ambiguous items (i.e. they had high loadings on more than one factor) and rerunning the PCA was followed until all remaining items loaded on only one factor and all the factors were readily interpretable. The analytic process accorded with that recommended by Tabachnick and Fidell [23] and Field. [24]

Results: Study 2

Age and gender bias in response was checked using two-tailed Chi-square tests and in both cases, the results were not significant (p>.05). The result of the PCA was that in relation to the hospital level governance, a three-component solution was considered the most interpretable (see Table 1).

Broadly, these three components related to the issues of:

1. Respect and support for, and engagement with, clinical staff;
2. Use of evidence to make decisions and to plan developments for the service; and
3. Understanding of, and links to, the local community.

Reliability analysis was undertaken for items comprising each of the three components (i.e. they were treated as scales) with the resultant Cronbach's alpha scores (1=0.966, 2=0.940, 3=0.925) indicating good consistency and reliability.

Subsequently, bivariate correlation coefficients between the three scales and the Turnover Intentions Scale were calculated and two-tailed tests of significance were performed. The results of these analyses are detailed in Table 2. The low-moderate correlations (i.e. -0.462, -0.561, -0.571) provide evidence of the relevance of work-level

Table 1: Eigenvalues and Rotated Loadings

	INITIAL EIGENVALUES		ROTATED SUMS OF SQUARED LOADINGS	
	TOTAL	% OF VARIANCE	TOTAL	% OF VARIANCE
Component 1	42.0	54.5	21.8	28.3
Component 2	2.8	3.7	16.9	21.9
Component 3	2.4	3.1	8.6	11.1
Total				**61.3**

Table 2: Correlations – Local Hospital Governance Scales and Turnover Intention Scale

SCALES	PEARSON CORRELATION	SIGNIFICANCE (2 – TAILED)
Respect and support for, and engagement with, clinical staff (related to Trust in Management)	-0.571	p<0.01
Use of evidence to make decisions and to plan developments for the service (related to Stewardship Governance)	-0.561	p<0.01
Understanding of, and links to, the local community (related to Stewardship Governance)	-0.462	p<0.01

governance to the sustainability and effective functioning of these organisations.

Discussion

This research explored effective governance in Australian public hospitals. Nurses' expectations of hospital governance were characterised in an inventory of items which were then evaluated and refined into reliable and valid scales pertaining to dimensions of nurses' governance preferences. These were then used to investigate the relevance of nurses' governance preferences to their turnover intentions.

While the scope of the two studies reported in this paper was limited, the results point to the governance in hospitals being sufficiently important to affect nurses' intentions regarding tenure. This is important if only because nursing shortages are evident in Australia's public health system and there is high level early-career departure from the profession. [25-27] More substantially, however, any decision about quitting seems likely to be preceded on myriad adverse organisational impacts of clinician dissatisfaction on the running of hospitals.

The findings from the two studies suggest nurses working in public hospitals expect and value a specific style of governance. This seems a style that accords with Bolton's [28] assessment of nurses having the motivation to achieve the best for patients and as having a keen interest in the processes they envisage will produce these outcomes. It seems reasonable to expect that this motivation will be found among other groups of clinicians working in public hospitals.

Thus, a governance imperative in public hospitals might relate less to managing the risk of clinicians pursuing self-interest as Agency Theory suggests and more to proactively responding to their desire that these organisations respond to the best interests of patients; ensure evidence drives decisions; and establishing a clear agenda for improving services. This conception of governance resonates with the tenets of Stewardship Theory, suggesting leaders of Australia's rural public hospitals should actively attend to its premises.

Notably, the findings of the current studies do strike a chord with the findings of Morrell, Loan-Clarke, Arnold, and Wilkinson [29] from their study of the causes of voluntary nurse turnover in the United Kingdom National Health Service. Similar to the findings of the current study, Morrell et al suggested nurses' schema of organisational governance practices played an important role in their evaluations of their workplace and that when nurses experienced perceived violations of professional and personal values and ethics, they were more inclined to leave their jobs.

While the current research is a preliminary contribution and needs to be replicated in differing contexts such as urban and other jurisdictions, it does highlight important areas for further research and development in the field of hospital governance.

Acknowledgements

The authors extend their thanks to all the research participants, especially to the front-line hospital nurses who contributed their time to this study.

Competing interests

The authors declare that they have no competing interests.

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REVIEW ARTICLE

Financing Healthcare in Indonesia

Suryanto, V Plummer and M Boyle

Abstract

Introduction: **There have been two major transitions for healthcare in Indonesia: the implementation of government decentralisation and universal health insurance. A universal public health insurance called Badan Penyelenggara Jaminan Sosial (BPJS) was launched in January 2014 and aims to cover all Indonesian people.**

Objective: **The objective of this paper is to discuss the funding of healthcare in Indonesia through a comparison with other South East Asian countries.**

Methodology: **A search for relevant literature was undertaken using electronic databases, Ovid Medline, ProQuest Central, and Scopus from their commencement date until December 2015. The grey literature from the Indonesian government, the WHO's and World Bank's website, has been included.**

Results: **There were nine articles from Ovid Medline, eight from ProQuest Central, and 12 from Scopus that met the criteria. Seventeen articles were duplicates leaving 12 articles to be reviewed. Nine documents have been identified from grey literature.**

Discussion: **Most people in Indonesia sought health services from the private sector and were out-of-pocket financially or did not receive the required care. The private sector delivered 62.1% of health services compared to 37.9% by the government. Despite some inappropriate use of previous health insurance, the BPJS is expected to have improved management and will cover all citizens by the end of 2019.**

Conclusion: **Indonesia has undergone a series of changes to health system funding and health insurance. There are lessons that can be learnt from other countries, such as Thailand, Cambodia, and Vietnam, so that Indonesia can improve its health funding.**

Abbreviations: **BPJS – Badan Penyelenggara Jaminan Sosial.**

Key words: **financing; funding; health insurance; healthcare; health system; Indonesia.**

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Introduction

The development and modernisation of the healthcare system in Indonesia is in a critical stage as the country is attempting to improve health outcomes for the poor as well as succeed in reaching the United Nations Millennium Development Goals. [1] There have been two major transitions for healthcare in Indonesia; the implementation of decentralisation of government authorities and universal health insurance coverage. [1] Decentralisation of government authorities was initiated in 2001 as a result of the fall of the Suharto regime [2] and this led to the increased authority of provincial governments to manage and organise health services for the community, including managing health funding. [3,4]

A new system of health insurance called *Badan Penyelenggara Jaminan Sosial* (BPJS) or universal health insurance coverage was launched on January 1, 2014 [5,6] and it is

estimated that it will cover all people in Indonesia by the end of 2019. [6] The achievement of 100% coverage in the next few years is remarkable given that only 63% of Indonesian people were covered by health insurance under governmental or private schemes in 2012 [7] and only 14% in 2000. [8] The people covered by health insurance in 2000 were mostly civil servants and their family members who were covered by Asuransi Kesehatan (Askes) and employees in the formal sectors who were covered by Jaminan Sosial Tenaga Kerja (Jamsostek). [8]

In this article the funding of healthcare in Indonesia will be analysed and compared with other South East Asian countries. There are three major issues which will be covered; the development of health insurance, the implementation of the universal health coverage and finally the role of government and the private sector in healthcare funding.

Methodology

Design

A review of medical related electronic databases, Indonesian Government websites and international organisation publications to examine healthcare funding in Indonesia was undertaken.

Process

A search was undertaken using three electronic databases, Ovid Medline, ProQuest Central, and Scopus from their commencement date until the end of December 2015. The search strategy used the following keywords: 'financing', 'funding', 'health insurance', 'healthcare', 'health system', and 'Indonesia'. The search used the keywords individually and in combination. The Indonesian government, the WHO's website, and World Bank's website were also searched for information about Indonesian health funding.

Articles and documents were included if they reported on the funding of healthcare in Indonesia, healthcare funding management in Indonesia, and health insurance in Indonesia either written in English or Bahasa Indonesia. Articles and documents were excluded if they were commentaries, letters to editors or if full-text was not available.

Results

There were 5,516 articles identified overall with 1,016 articles identified in the Ovid Medline, 1,378 in ProQuest Central, and 3,122 in Scopus. Further screening for relevance was undertaken based on the title and abstract. This resulted in 21 articles from Ovid Medline, 18 from ProQuest Central, and 31 from Scopus retrieved for further review. Those 70 articles were then reviewed based on inclusion and exclusion criteria. Based on the criteria, there were nine articles from Ovid Medline, eight from ProQuest Central, and 12 from Scopus with 17 of them duplicated leaving 12 articles to be reviewed. There were nine documents identified on the Indonesian government, the WHO, and World Bank's websites for inclusion in the review.

Discussion

The development of health insurance in Indonesia and other, similar countries

Indonesia has implemented one health insurance scheme specficially for the poor through the establishment of the BPJS program in early 2014. The poor and near poor are approximately 50% of the population and became the focus of the government response. This group is vulnerable to both economic and health shocks which can push the household into poverty. [1] In 2012, half of the population was covered by a government health insurance called Jamkesmas (50.4%). [7] Details of the number of people covered by the different types of health insurance available in 2012 can be seen in Table 1.

Table 1: Coverage of Health Insurance in Indonesia in 2012

TYPE OF HEALTH INSURANCE	MEMBERS	PERSONS
Askes	Civil servants, pensioners	17,274,520
Military and police health insurance	Military and police officers	2,200,000
Jamkesmas (by national government)	Poor people	76,400,000
Jamsostek	Formal sector workers	5,600,000
Jamkesda (by regional government)	Poor people	31,866,390
Corporate insurance	Private members	15,351,352
Commercial health insurance	Private members	2,856,539
Total		**151,548,981**

Source: [7] Simmonds A, Hort K. Institutional Analysis of Indonesia's Proposed Road Map to Universal Health Coverage. Health Policy and Health Finance Knowledge Hub. 2013; 33: 1-13.

During the regime of President Suharto, only civil servants, soldiers, and formal sector workers, such as State-Owned Enterprise workers, were covered by health insurance. [9] The health insurance for civil servants was called *Askes* and for formal sector workers was called *Jamsostek*. [8] These two health insurances were the most commonly used insurances and had the largest membership in Suharto's era. However, there were several changes to the health insurance program, which were initiated by the Indonesian government along with the fluctuations of the political situation and the development of Indonesia itself.

Askes was introduced in 1968 and had been compulsory for civil servants. A fixed monthly deduction of 2% of salaries had to be used as a premium the health insurance. [10] *Askes* not only covered the health insurance for civil servants, armed forces and their families, but also pensioners were covered for comprehensive health services provided by public health facilities. [10] Similar to *Askes, Jamsostek* was launched in 1992 and covered employees in formal sectors [9] with a higher premium than *Askes*, 3% of their monthly salary for single employees and 6% of the monthly salary for married employees. [10]

Kartu Sehat, introduced in 1994 and ceased in 2004, was a health insurance program targeting poor households in order to reduce the inequality and access gaps for healthcare services. [11] In response to the Asian economic crisis and as a part of *Jaring Pengaman Sosial* (JPS) or the social safety net program in Indonesia, the insurance was reintroduced in 1998. [9,11,12] The insurance provided health services, including outpatient and inpatient care, contraception, prenatal care, and delivery for poor people. [12] However, based on the study by Sparrow, [12] a large amount of the insurance went to richer quintile households, not the poor, since most of the targeted people were in rural areas with those poor rarely using the card due to a lack of access to health facilities. Another study showed that there was a low utilisation of the insurance due to the lack of public facilities. [11]

Asuransi Kesehatan Keluarga Miskin (Askeskin), was in place from 2004 to 2008, and was a program which was a substitute for the *Kartu Sehat* program. [13] Even though *Askeskin* had been successfully providing coverage for the poor, based on a socioeconomic survey in 2005 and 2006, the insurance was used by those other than the poor. [13] This problem was due to the 'open system' meaning eligible patients used self-identity as poor people, rather than identification by authorised persons or the health service, which lead to misuse of the system. [14]

Jaminan Kesehatan Masyarakat (Jamkesmas) is another health insurance for poor people which substituted *Askeskin* and commenced in 2008. [9] Compared to *Askeskin, Jamkesmas* had a higher coverage rate with 76 to 86 million Indonesians targeted at a total cost of 8.29 trillion rupiahs, about US$703 million. [7,9] This expansion was due to increasing the coverage to include the near-poor. [15] The outcome was similar to other health insurance for the poor, in that Jamkesmas was under-utilised. [7] There were several factors influencing the underutilisation of the Jamkesmas including a lack of understanding of the program, the remote areas where the poor people lived meant that the services could not reach the targeted people, several other expenses for medicines were not covered by the insurance so the people still had to spend their own money for care, and finally and potentially most significantly, the stigma of perceiving and self-identifying as poor. [7]

Despite the wide coverage of the *Jamkesmas* national program, there were people who were not categorised as poor or near poor by the national criteria, thus several regional governments provided *Jaminan Kesehatan Daerah (Jamkesda),* which was managed by regional governments, to expand the coverage of *Jamkesmas*. [9] In spite of the underutilisation of the programs, *Jamkesmas* and *Jamkesda* had covered 76 million (32% of total population) and 33 million (14% of total population) people respectively by the end of 2011. [9] In order to enhance the *Jamkesmas* coverage for maternity services, in 2011, the Ministry of Health launched the *Jaminan Persalinan (Jampersal)* program which provided free maternal care including ante natal care, delivery service, postnatal care, neonatal care and contraception. [16]

While Indonesia started health insurance for the poor in 1994, Vietnam commenced a similar program in 1999, called the 'free card' program. [17] However, the program relied on local funding which led to the local government encountering several obstacles, especially where the poverty rate of the province was high, and this led to the low coverage of the population by this insurance. Therefore, in 2003, the new health insurance for the poor called Health Care Fund for the Poor (HCFP) was introduced. [17] In 2006, 20% of the Vietnamese population, 14.5 million, were covered by the HCFP, but similar to Indonesia in regard to the misuse of the insurance, in Vietnam 3.5 million (40%) people covered by the program were ineligible and 8.4 million eligible people were not covered by the program. [17] It is common that health services have a pro-rich bias. The experience in Indonesia and six other countries in Asia

except Hong Kong, Malaysia, Sri Lanka, and Thailand was that the poor get far less advantages from services. [18] Forty-one percent of the richest in Indonesia benefited from health services while 7% and 5% of the poor benefited from both outpatient and inpatient services respectively. [18]

Compared to Thailand, Indonesia has also been slow to implement health insurance for the poor. In Thailand, the first health insurance for the poor, the Medical Welfare Scheme (MSW), was established in 1975 and was then followed by the establishment of health insurance for government and state enterprise employees called the Civil Servant Medical Benefit Scheme (CSMBS) in 1978. [19] On the other hand, the Indonesian government, initially, focused on health insurance for government employees instead of focusing on health insurance for the poor. The health insurance for government employees, Askes, was established in 1968, [10] while the first health insurance for the poor, Kartu Sehat, was established in 1994, [11] more than 20 years after.

The implementation of BPJS

In Indonesia the concept of BPJS is mutual assistance which is the program that will unify all health insurance schemes for civil servants, police, formal workers, and for the poor. [7] With respect to the premiums, based on the President's Regulation of the Republic of Indonesia *(Peraturan Presiden)*, there are two categories of BPJS participants, Indonesian people without government support and Indonesian people with government support. [20] Based on this regulation, the government will give support to the poor for their health insurance premiums and others will self-fund or salary package via their employers.

Simmonds and Hort [7] argue that there are five major challenges in implementing the BPJS: the fragmented health financing system, decentralisation, demographic transition, high out-of-pocket spending, and low levels of spending on health by the central government. However, those challenges were met by the government through key regulations. The most current law, No. 111/2013, describes all aspects of the BPJS including types of participants, process of registration, premium fees, payment systems, service coverage and evaluation process. [20] However, as Indonesia is a lower-middle income country and has more than 250 million people with five-year target (end of 2019) to cover all citizens, it is a big challenge for the Indonesian government to implement universal health coverage.

Several lessons can be learnt from Thailand. In Thailand the universal health coverage called Universal Coverage Scheme (UCS) was implemented in April 2001 [19] and covered 75% (47 million) of the population by 2003. [18,19] The government subsidy, from US$ 1 billion in 2003 to US$ 1.3–1.5 billion in 2004-2009, has influenced the successful implementation of the UCS in Thailand. [18] This success can be seen from the fact that the number of uninsured people had decreased sharply from 54.5% in 1996 to 29.8% in 2001. [19] Out-of-pocket payment is still dominant among low-middle income countries, [17] but the implementation of UCS in Thailand had reduced the out-of-pocket expenditure from 33% in 2001 to 18% in 2008 while increasing the government subsidy from 50% to 67% of total health expenditure. [18]

The role of Governments in healthcare funding

The decentralisation of government authorities in Indonesia, which commenced in 2001, has significantly impacted the health system. Local governments have responsibility for planning, financing and distributing health services yet the central government has retained overall regulatory authority. [21] Every level of health office has their own roles. The provincial level health office main roles are training and coordination, the district-level health office has responsibility for delivering health services and allocating resources, while the sub-district level mainly focuses on providing basic health services in the Puskesmas, a type of community health centre. [1]

The implementation of a decentralised health system has made health financing more complicated as local governments could not implement all services arising from the mandatory universal health insurance from the central government. [1] Local governments had to apply a national health insurance scheme while also implementing decentralised health insurance and this was difficult to realise. Implementing both health insurance schemes was not only confusing for healthcare providers, but also for patients. As a result, almost half of the sick and injured in Indonesia sought health services from the private sector and were out-of-pocket, even though the government's principle, Alma Alta, is to provide universal access to primary care for all Indonesians. [1] A similar situation occurred in Cambodia where the country implemented health service decentralisation in 1994 and experienced similar obstacles to Indonesia. Lack of role clarity between the Provincial Health Departments and Operational Health District was one of the major problems resulting in poor integration. [22]

Expenditure by sector and country type

Since most Indonesians seek health services from the private sector it is not surprising that the majority of health

expenditure in Indonesia is contributed by the private sector rather than the government. In 2011 the contribution was 62.1% by the private sector compared to 37.9% by the government [23] even though the government had increased funding of health as a proportion of total government expenditure, from 4.5% in 2000 to 6.2% in 2011. [23] However, this proportion is still below the average among South-East Asian countries, which was 7.3% in 2000 and 8.7% in 2011. The proportion of Indonesian health expenditure was 7.1% in 2000 and 8.1% in 2011. [23] Nevertheless, the health expenditure had been increased from 2.0% of Gross Domestic Product (GDP) in 2000 to 2.9% in 2011. Compared to other South-East Asian countries the proportion of health expenditure in Indonesia in 2011 was higher than Myanmar, 1.8% of GDP, but lower than Thailand and Timor Leste, 4.1% and 4.6% respectively. [23] The detailed comparison of health expenditure in Indonesia and selected global societies can be seen in Table 2.

Table 2: Comparison of Indonesian Health Expenditure and Other Countries in 2011

CHARACTERISTICS	TOTAL EXPENDITURE ON HEALTH AS % OF GDP	GENERAL GOVERNMENT EXPENDITURE ON HEALTH AS % OF TOTAL HEALTH	PRIVATE EXPENDITURE ON HEALTH AS % OF TOTAL HEALTH EXPENDITURE	GENERAL GOVERNMENT EXPENDITURE ON HEALTH AS % OF TOTAL GOVERNMENT EXPENDITURE
Indonesia	2.9	37.9	62.1	6.2
South-East Asian Countries (average)	3.7	36.7	63.3	8.7
Lower-Middle Income Countries (average)	4.4	36.6	63.4	8.1
Global (average)	9.1	58.8	41.1	15.2

Source: [23] World Health Organisation. World Health Statistics 2014. Available: <http://www.who.int/gho/publications/world_health_statistics/2014/en/> (Accessed 14/05/15)

Even though the Gross National Income of Indonesia increased from US$150,317 million in 2000 to US$822,696 million in 2011, [24] health expenditure was still below 3% of GDP in 2011. [23] In addition to this significantly below average government health expenditure, a large part of the government budget is for healthcare provider salaries. However, more than 67% of Puskesmas physicians were engaged in dual practice, in both the private and public sectors, [25] which may lead to an inefficient use of public funds for health. Even though Indonesians have utilised more private services than public, with the implementation of universal health coverage (BPJS) it is expected that there will be a shift from the private sector to public health services. [1] This is because the universal health insurance will focus on public health services including primary health services (Puskesmas) and public hospitals. [6] A study evaluating the impact of the universal health insurance in Thailand shows that the implementation of the insurance scheme may increase the use of district hospitals by 2.3% and decrease the use of provincial hospitals by 4.1%. [18] This article may be potentially limited by the lack of accurate and current information about the Indonesian Government financial status and other literature about the financing of government authorities and the health system in general. There is also a lack of current documented government and health services funding from similar countries thereby making accurate and current comparisons difficult.

Conclusion

Many regulations have been issued in order to increase the health status of the Indonesian people, especially the poor, by rapid changes to health insurance during the last two decades. The current health insurance scheme (BPJS) is projected to provide access to healthcare services for all citizens in Indonesia by the end of 2019. It is believed that BPJS will be well implemented through the introduction of legislation. The most recent Indonesian government is likely to have new perspectives and ideas regarding health funding which could change policies, procedures and regulations about health insurance and this may influence both health services provision, insurance and funding arrangements, thereby improving outcomes for people seeking health services. Lessons can be learnt from other countries, such as Thailand, Cambodia, and Vietnam.

Competing Interests

The authors declare they have no competing interests.

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RESEARCH ARTICLE

Addressing Health Insurance Deductions through an Interventional Study: the Case of a Large Central Hospital

E Kharazmi, A Salehi, N Hashemi, S Ghaderi and N Hatam

Abstract

Objective: A large proportion of hospitals' private income is provided by insurance organisations. Hospitals in Iran face various problems in terms of insurance deductions from insurance organisations resulting from inefficient performance by both the hospitals and the insurers. These problems necessitate more specific cost control in this area. This research assesses the causes of insurance deductions by using the Failure Mode Effects Analysis (FMEA) technique, and addresses the issues resulting in deductions by providing some interventions through the Pareto technique.

Design: The 10-step pattern of FMEA was implemented for assessing the main causes of insurance deduction in this study.

Setting: Data was collected from deduced amounts by three main/largest contracting party insurance organisations (e.g. the Social Security Insurance Organisation, Medical Services Insurance Organisation and Armed Forces Medical Services Insurance Organisation of Namazi Hospital, a large healthcare provider in the South of Iran, in 2014.

Findings: Sixty-five potential failure causes were identified, of which 26 were related to the anaesthesia unit, 23 were related to the surgery room unit and 16 were related to the hospitalisation unit. Deductions in the anaesthesia and hospitalisation units and the surgery room were reduced after intervention programs by 14.42%, 57.76%, and 51.52%, respectively.

Conclusions: Using the FMEA technique in a large healthcare provider in Iran resulted in identifying the main causes of insurance deductions and provided intervention programs in order to increase the efficiency and productivity of healthcare services.

Abbreviations: FMEA – Failure Mode Effects Analysis; RPN – Risk Priority Number.

Key words: health insurance; hospital; FMEA analysis; pareto analysis; Iran.

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Introduction

The growth of expenditure in healthcare systems is affecting the delivery of high quality services. The largest portion of healthcare costs (60-80%) is allocated to hospitals as the main component of the healthcare system. [1,2] Investigations show that the allocation of healthcare costs to hospitals in 12 Asian countries varies between 33-70%. [2] In Iran healthcare expenditure has also been increasing rapidly during the recent years and has placed critical resource pressures on the healthcare system. [3]

This presents hospitals with challenges in providing the financial resources to deliver high quality healthcare services. [4] The way that hospitals obtain monetary resources depends on their ownership type. In private hospitals the resources are principally supplied from the hospital's private income, while public hospitals fund their basic financial resources from the general government budget. These hospitals use private income as supplementary financial resources. [5] In Iran, after implementing the hospital autonomy plan in 1995, the state budgets were discontinued and from 1997, financial credits were enacted to provide the stipends (salary) only. As a consequence, the state budgets lost their role as the main monetary resource for public hospitals, and the hospitals themselves were responsible for their financial resources; thus selling services and private income became their major financial supply. [6]

A large proportion of hospitals' private income is provided by insurance organisations. [7] According to an investigation, general and private hospitals are able to gain 62.05% of their funds from private income, of which 56.10% comes from insured patients and 5.95% comes from non-insured ones. [8] The number of insured people is growing, and thus, the important role of insuring organisations in supplying the income of hospitals is increasing. [9] However, as evidence shows, hospitals face various problems with their contracting party insurances, and in some cases, the insurance organisations place hospitals under financial stress. According to the literature, one of the most significant pressures on hospitals is insurance deductions. In other words, in the majority of cases insurance companies deduct part of the total requested amounts from hospitals after monthly investigating their financial documents. These deductions cause dissatisfaction among contracting hospitals, intensified by delays in the payment of their claims. According to existing statistics, 80% of the bills sent by hospitals are reduced before investigating and removing errors and hospital requested claims are paid sometimes with 9-12 months delay by insurance organisations. [8]

According to the literature, deductions by insurers cause problems both for hospitals and insurance organisations. For hospitals, the reduced amounts are part of the income that is actually not received, and for insurers, the bills and documents with deductions require more investigation, demanding more costs and taking more time. Therefore, describing the causes of insurance deductions can be beneficial to a large extent in this context. In fact, through identifying the causes, the patients' bills can be prepared quickly and accurately by hospitals, can be sent in a timely way to the insurance organisations and can be investigated promptly by them.

Furthermore, investigating the causes of insurance deductions provides valuable information to hospital managers about existing weaknesses, thus enabling them to reduce deductions and increase hospital income. [10] The present study was devoted to investigating the main causes of insurance deductions by using the Failure Mode Effects Analysis (FMEA) technique and then resolving them using the Pareto technique. [7] The case studied in this paper is Namazi Hospital, the largest public hospital in the south of Iran, located in Shiraz city.

Methods

The current study involved the three main/largest contracting party insurance organisations of Namazi Hospital including the Social Security Insurance Organisation, the Medical Services Insurance Organisation, and the Armed Forces Medical Services Insurance Organisation.

The existing data of reduced amounts by these three insurance organisations in 2014 (21st March till 21st June) were collected and organised based on the types of the services they provided. As the anaesthesia and hospitalisation units and the surgery rooms had the highest amount deducted by each of the three insurers, only deductions related to these three units were investigated.

The FMEA technique was used to assess the main causes of insurance deduction. FMEA is a systematic, proactive technique for evaluating the hazards of a process malfunction, to make decisions about where to execute progress actions, and to assess the effect and outcome of those actions. [11] Accordingly, the 10-step recognition pattern of FMEA was implemented through the following steps. [12-14]

Reviewing the key process steps

The flowcharts of activities in anaesthesia unit, surgery room and hospitalisation units in the Department of Health Economics (as the responsible unit for controlling, investigating and sending the documents to insurance companies) were plotted. The flowcharts indicated that some of the processes applied in recording the activities led to missed or incorrect records. This caused an increase in insurance deductions.

Step 1: Listing the potential failure mode

Based on the flowcharts of the previous step, all failure causes were identified with the cooperation of experts in the Health Economy Unit through brainstorming. A complete list of wrong process steps and inputs was prepared.

Step 2: Specifying the effects of the potential failure mode

Through listing the failure causes on the data collection form, the health economics experts identified the effects of the potential failures, on the anaesthesia unit, surgery room and hospitalisation units.

Step 3: Specifying the severity degree of each effect

With the cooperation of health economics experts, the severity degree of each potential failure mode effect was ranked from one (being not severe at all) to ten (being extremely severe).

Step 4: Identifying the occurrence rate of the failure mode/effect

The occurrence rate of each failure mode was specified based on the data obtained from exploring the causes of deductions in the patients' records. The occurrence was ranked from one (highly unlikely to ever occur) to ten (likely to happen all the time).

Step 5: Specifying the probability of detection to each failure mode/effect

The probability of detection indicates how a failure/effect is likely to occur. Based on the controls in place, the health economics experts ranked the detection probability from one (the failure/effect is fully detectable) to ten (the failure/effect is quite undetectable).

Step 6: Allocating a Risk Priority Number (RPN) to each failure mode/effect

The RPN is calculated by multiplying the Severity (S), Occurrence (O), and Probability of detection (P) numbers:

$RPN = S \times O \times P$

This is a key number that determines which potential failure mode has the most priority and should be focused on first.

Step 7: Sorting the failure mode/effects by RPN number

The failure/effects were sorted in descending order by the RPN scores. The priority of the failure modes was specified for the anaesthesia unit, surgery room and hospitalisation unit based on the RPN. Then the Pareto technique and the 20:80 rule were applied to determine the failure/effects that required intervention. The 6-stage Pareto pattern is as follows:

Stage 1: Identifying the problems to be solved

The potential failure causes with the highest RPN score within the spring of 2014 (21st March till 21st June) were determined as the target problems to be resolved.

Stages 2 and 3: Recording the observed problem cases on a data record sheet to calculate their frequencies/scores

In the present study, the RPNs of the failure causes were considered as the frequencies or scores of the observed problems.

Stages 4 and 5: Preparing a frequency distribution table

During this stage, the problems were grouped together by cause. The frequency distribution table was prepared for each of the units studied. The table included the failure causes with the highest RPNs, the frequency column and the cumulative frequency column.

Stage 6: Drawing the Pareto chart

Pareto charts of failure causes were drawn for the anaesthesia unit, the surgery room and the hospitalisation units.

Step 8: Taking appropriate actions to remove or reduce the causes with high priority

In this step, the failure causes, which were in the risky region according to the Pareto chart, were selected for intervention during the summer of 2014 (21st June till 21st September). The intervention types were selected by consulting the health economics experts inside and outside of the hospital. The interventions included training and consulting staff of the relevant units about correct filling of the sheets related to the activities done for each patient, and negotiation with insurance organisations to convince them to undertake some treatment costs.

Step 9: Recalculating the RPN after intervention and/or remove the effects of potential failure causes

The risk priority numbers were recalculated for cases with the highest RPN values to specify the efficiency of the FMEA technique. The Pareto charts were also redrawn for the anaesthesia and hospitalisation units and the surgery room.

Results

The FMEA technique was conducted in three main units of Namzi hospital including the anaesthesia and hospitalisation units and the surgery room, as the units with the highest deductions in patients' records. Sixty-five potential failure

causes were identified, of which 26 were related to the anaesthesia unit, 23 were related to the surgery room unit and 16 were related to the hospitalisation unit.

The RPN scores calculated for the failure causes revealed that the highest RPN value in the hospitalisation unit was related to 'not sealing/signing the procedure sheet by the physician' (RPN = 320) and the lowest RPN value was related to 'incorrect date recording on the visit sheet' (RPN = 40). In the surgery room, 'additional surgery room code', 'wrong surgery room code', 'excess percentage for the surgery room', 'additional surgery commission code' and 'excess percentage of surgery commission' had the highest RPN values (each with RPN of 350) and 'not considering the surgeon assistant' had the lowest score (RPN = 24). The highest RPN value in the anaesthesia unit belonged to 'code 51 of anaesthesia' (RPN = 1000) and the lowest belonged to 'adjusting the cardiac anaesthesia shorter than four hours' (RPN = 20).

Pareto charts obtained before and after intervention in each of the hospitalisation units and the surgery room indicated that:

- Out of 16 failure causes related to deductions of the hospitalisation unit, ten cases had the largest influence on deductions (Figure 1). In other words, 80% of deductions related to the hospitalisation unit were revealed to originate from ten of the failure causes. Five out of the ten causes were intervened, which are presented in Table 1 at the end of the article with their RPN scores before and after the intervention.
- Out of 23 failure causes related to deductions of the surgery room, 12 were risky (Figure 2). In the present study, six out of the 12 causes were intervened, which are presented in Table 2 with their RPN scores before and after the intervention.
- Out of 26 failure causes related to deductions of the anaesthesia unit, 11 causes were risky (Figure 3). In this study, four of these causes were intervened. Table 3 presents descriptions and RPN values of these causes before and after the intervention.

As Tables 1-3 appearing at the end of the article indicate, the RPN values after intervention has decreased in comparison with the values before intervention. This means that the failure causes and consequently the deductions have decreased in all the three units. The anaesthesia unit had the largest ratio of deductions by all three insurance companies. Deduction amount in this unit was (US)$14,590 in the spring of 2014, which has decreased to (US)$12,487 in the summer of the same year (14.42%). The amount of deductions by the three insurance companies in the surgery room has decreased from (US)$2,185 in the spring of 2014 to (US)$923 in the summer (57.76%). In the hospitalisation unit, (US)$53,182 was deducted during the spring of 2014, which has decreased to (US)$25,786 in the summer (51.52%). These reductions consequently resulted in the increase of the hospital revenue.

Discussion

Insurance deduction is a significant issue in healthcare systems that could result in major financial challenges for hospitals. Considering this problem, the present study investigated the insurance deduction amounts and their causes in Namazi Hospital as the major healthcare provider in the south of Iran. The FMEA technique was applied for this purpose and, an intervention was taken through the Pareto technique. As a result, the findings demonstrated decreases of the RPN values related to all intervened failure causes.

Recently FMEA has been used in many healthcare organisations and hospitals in order to improve their processes. In agreement with the current study, other research indicates the usefulness of this instrument in various healthcare services. For example Capunzo et al (2004) experimented with the application of FMEA technique in a clinical laboratory. [11] In addition, intervention programs in the Child Cancer unit by Van Tilburg et al (2005) and Robinson et al (2006) resulted in removing ten high risk failures in the first study, and decreasing the potential mistakes by 9% in prescriptions while increasing the use of standard prepared prescription packages by 23% in the second study. [15-16]

Adachi and Lodolce (2002) also applied the FMEA method to increase confidence in administering venous medications. According to this study, incorrect dosage included 17% of iatrogenic mistakes, with the incorrect adjusting of venous injection pumps being the most prevalent failure cause (41%). One year after intervention, the number of iatrogenic mistakes related to drug administration dropped from 59% in 2002 to 46% in 2003 and the wrong adjustment of injection pumps decreased from 41% in 2002 to 22% in 2003. [17] In a similar study by Apkon et al (2004) failure causes with RPN values higher than 225 decreased to fewer than 100 at the end of intervention. [18] Wetterneck et al (2006) also used the FMEA technique to evaluate the intelligent injection pumps and presented reforming suggestions for 13 out of 18 failure causes. [19] These studies indicate the usefulness of FMEA in identifying malfunction of different healthcare services and providing possible intervention programs.

In the present study, the most prevalent causes of insurance deductions are related to the physician not sealing and not signing the procedure sheet, not recording the date of releasing the result in the consult sheet, incomplete filling in the visit sheets, not recording the date on the visit sheet, altered procedure sheet in hospitalisation unit, wrong coding in surgeries and incorrect filling in the anaesthesia sheet. Accordingly, in a study by Fatehi Peykani in 1999 in Iran, the main causes of deductions of inpatients' bills were shown to be the wrong coding of surgeries, not executing the general regulations, mistakes in calculating the tariffs, lack of documents in patients' records, excess price and differing global general tariff. [20] An investigation by the Quality Improvement Committee of Tehran University of Medical Sciences in 2001 also demonstrated that not writing prescriptions and not describing the operation by physicians, untimely sending of the para-clinical reports, lack of documents sent by hospital units, lack of practical commitment by the organisation and experts to educational issues (for educational health centres), incorrect bill preparation (not sealing by the technician and not mentioning the price), staff inpatient discharge and accounting units not informed of the latest circulars, lack of human resources, lack of tariffs in some new specialist services, lack of unanimity between the two parties, problems in confirming the operation and/or the insurance handbook before hospitalisation are known as the prevalent causes of deductions. [21]

Conclusions

In general, results of the present study indicate that not-so-complicated actions to remove the insurance deductions in different hospital units will result in remarkable benefits, such as increasing the revenue of hospitals as well as saving the time and work expenses, which consequently enhance the efficiency and productivity of healthcare services. This is particularly essential for Namazi Hospital as the most important healthcare provider in the south of the country, especially considering the growing population and the increasing number of children and the elderly.

Competing Interests

The authors declare they have no completing interests.

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Table 1: Worksheet of analysing the most important failure causes in the Hospitalisation Unit before and after the intervention

FAILURE MODE	FAILURE CAUSES	FAILURE EFFECTS	OCCURRENCE BEFORE INTERVENTION	OCCURRENCE AFTER INTERVENTION	DETECTION BEFORE INTERVENTION	DETECTION AFTER INTERVENTION	SEVERITY BEFORE INTERVENTION	SEVERITY AFTER INTERVENTION	RPN BEFORE INTERVENTION	RPN AFTER INTERVENTION
Not sealing/signing the procedure sheet by the physician	Disregarding by the staff Physician not gaining profit Being very busy Residents and new physicians not familiar Staff not motivated Increasing deductions		8	8	5	4	8	8	320	256
Altered procedure sheet	Staff not informed of alteration consequences	Decreasing the hospital incomes	7	6	5	4	7	7	245	168
Incomplete filling in the visit sheet	Disregarding by medical staff		6	6	6	5	7	7	252	210
Date not inserted on the visit sheet	Staff forgot to insert the date	Increasing the costs for reinvestigations by the staff	6	5	6	5	7	7	252	175
Date of releasing the result not recorded on the consult sheet	Physician disregarded or forgot to insert the date		6	6	6	5	8	8	288	240

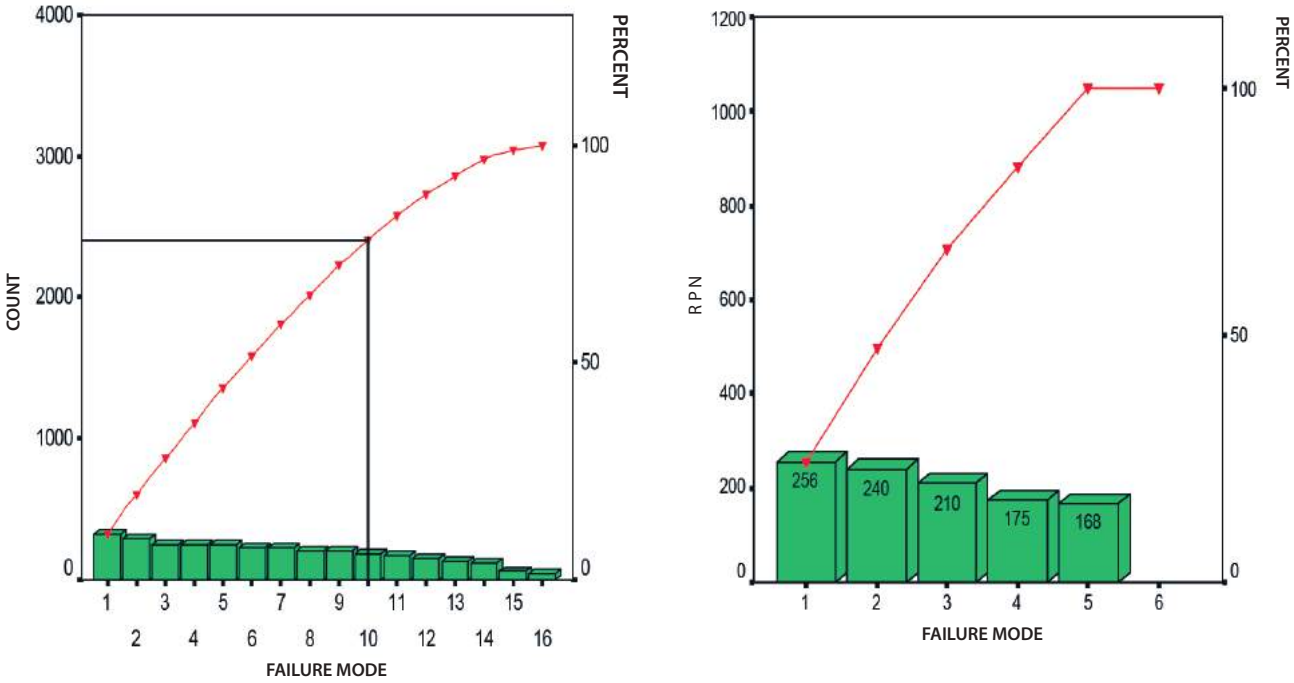
Table 2: Worksheet of analysing the most important failure causes in the Surgery Room before and after the intervention

FAILURE MODE	FAILURE CAUSES	FAILURE EFFECTS	OCCURRENCE BEFORE INTERVENTION	OCCURRENCE AFTER INTERVENTION	DETECTION BEFORE INTERVENTION	DETECTION AFTER INTERVENTION	SEVERITY BEFORE INTERVENTION	SEVERITY AFTER INTERVENTION	RPN BEFORE INTERVENTION	RPN AFTER INTERVENTION
Wrong code of the surgery room	Mistake by the technician gaining profit Problem with existing tariffs	Increasing deductions	7	5	10	8	5	6	350	240
Additional code of the surgery room	Mistake by the technician Problem with existing tariffs	Decreasing the hospital incomes	7	6	10	9	5	5	350	270
Excess percentage for the surgery room	Mistake by the technician Problem with existing tariffs		7	6	10	9	5	5	350	270
Incomplete description of operation for the surgery commission	Writing quality of the operation description disagree with intruction of insuring organisations	Increasing the costs for reinvestigations by the staff	6	5	9	9	6	6	324	270
Additional code of the surgery commission	Mistake by the technician Problem with existing tariffs		7	6	10	9	5	5	350	279
Excess percentage for the surgery commission	Mistake by the technician Problem with existing tariffs		7	6	10	9	5	5	350	270

Table 3: Worksheet of analysing the most important failure causes in the Anaesthesia Unit before and after the intervention

FAILURE MODE	FAILURE CAUSES	FAILURE EFFECTS	OCCURRENCE BEFORE INTERVENTION	OCCURRENCE AFTER INTERVENTION	DETECTION BEFORE INTERVENTION	DETECTION AFTER INTERVENTION	SEVERITY BEFORE INTERVENTION	SEVERITY AFTER INTERVENTION	RPN BEFORE INTERVENTION	RPN AFTER INTERVENTION
Code 51 of faculty ot anaestheia	Excess charge leading to coding for each operation	Increasing deductions	9	9	10	4	10	10	900	360
Differing CVP artery price of adjustment faculty	Disagreement with the insurance company	Decreasing the hospital incomes	8	7	5	4	7	8	320	224
K2 monitoring of the adjustment faculty	Insurer not committing to undertake monitoring of the faculty		8	8	10	8	9	9	720	576
Not having the global adjustment operation for the adjustment faculty	Time of the operation not clear Same fee paid throughout the country	Increasing the costs for reinvestigations by the staff	8	7	6	9	5	5	240	315
Code 51 of anaestheia	Excess charge leading to coding for each operation		10	10	10	4	10	10	1000	400

Figure 1: Pareto chart of the Hospitalisation Unit before and after the intervention

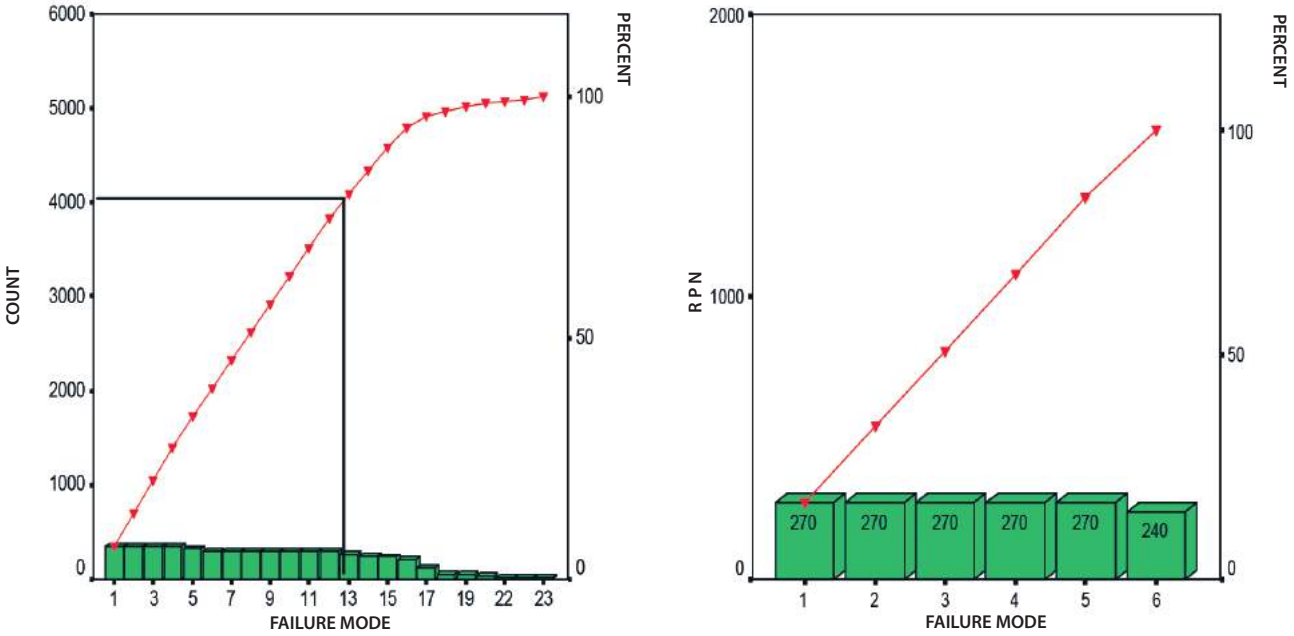


3000 × 80% = 2400

RPN > 2400 → Safe region

RPN < 2400 → Risky region

Figure 2: Pareto chart of the Surgery Room unit before and after the intervention

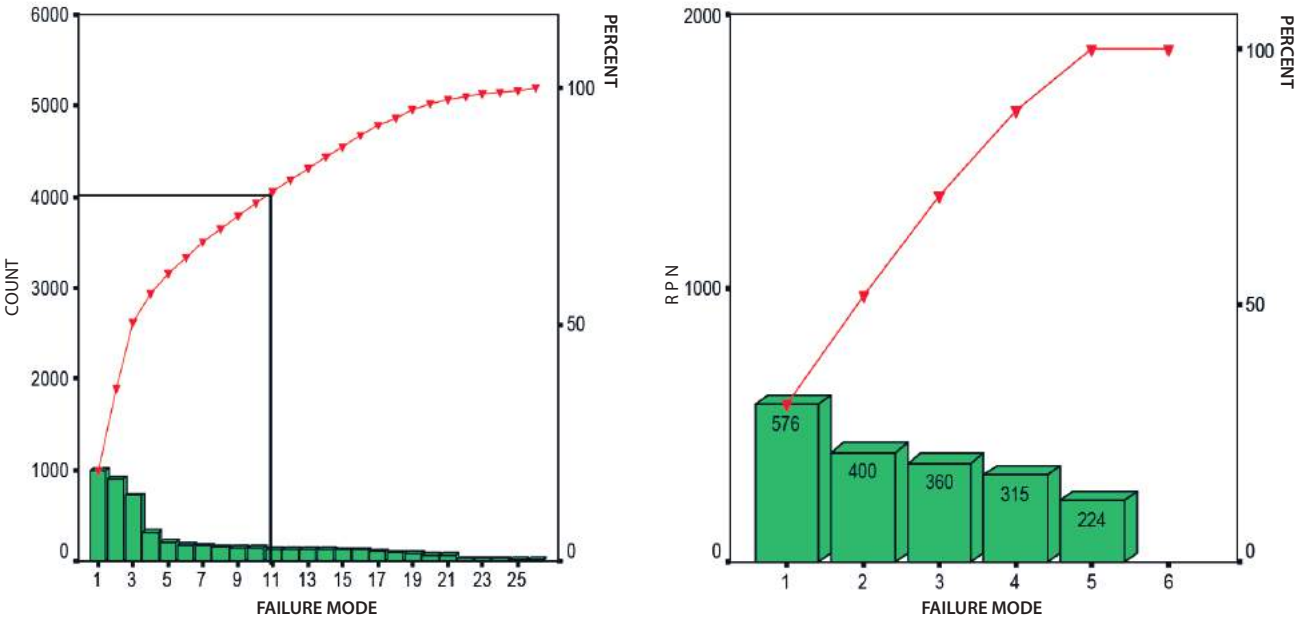


5000 × 80% = 4000

RPN > 4000 → Safe region

RPN < 4000 → Risky region

Figure 3. Pareto chart of the Anesthesia Unit before and after the intervention failure mode



5000 × 80% = 4000

RPN > 4000 → Safe region

RPN < 4000 → Risky region

RESEARCH ARTICLE

Assessing the Adoption of a Home Health Provisioning System in India: an analysis of doctors' knowledge, attitudes and perceptions

N Agarwal, MP Sebastian and S Agarwal

Abstract

Background: Unlike developed countries, home healthcare provision systems (HHPS) are not widely prevalent in developing countries like India. Our objective was to study the knowledge, attitudes and perceptions of doctors in India about the adoption of HHPS.

Methods: Our survey included 180 doctors across India, working in local hospitals. Using online and paper-based questionnaires, we used bar charts and pie charts to represent the frequency distributions. We also conducted multivariate logistic regression analysis to understand the importance of the selected factors upon the dependent variables of interest such as willingness to work during non-office hours, desire for increased remuneration, and willingness to enrol in HHPS.

Results: The desire for an increase in remuneration made doctors more willing to enrol in HHPS. Possible reasons for doctors to enrol included the ability to answer follow-up queries through email or video chat and HHPS being integrated with the local healthcare system in the hospital. Young male doctors were most likely willing to provide services through HHPS during non-office hours as compared to females. A large majority of doctors indicated hospital visits to be important for follow-up queries, but several doctors indicated that simple patient queries could be addressed by non-personal interactions like video chat or email.

Conclusions: The desire for extra remuneration could be the primary reason for the willingness of doctors to work during non-office hours and thus enrol in HHPS. The majority of doctors considered hospital visits to be important, but several doctors also indicated that nonpersonal interactions using text messages, telephone, email and video chat might serve as important methods to respond to simple follow-up queries from patients.

Abbreviations: EMR – Electronic Medical Record; HHPS – Home Help Provisioning Systems; ICT – Information and Communication Technology; ISO – International Organisation for Standardisation.

Key words: concierge medicine; technology adoption; EMR; home healthcare; services; ICT.

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Introduction

Home Health Provisioning Systems (HHPS) represent an arrangement where physicians provide routine, emergent, as well as 'enhanced' healthcare services, in patients' homes. [1,2] As a part of the system, patients are generally provided emergency as well as routine primary healthcare services. [2] These systems have several benefits, which include enhancing the convenience for patients and allowing supplemental fees for doctors. They primarily provide more personalised care to patients as the appointments are for a longer time as compared to traditional hospital visits. Moreover, a solid physician-patient relationship is established, and there is 24-hour access to doctors. [3,4]

These systems become financially more viable because there is provision for routine as well as expanded primary healthcare services in addition to emergency healthcare services. [2] Although these systems are in existence in many developed countries, they are yet to be introduced in developing countries like India. This form of healthcare service practice is known by various names, most commonly 'concierge medicine,' 'boutique medicine,' 'access fee practice,' or 'retainer practice'. [1] In this paper, we refer to this healthcare service practice as HHPS. The aim of the study is to understand whether the doctors in a developing country like India would welcome the idea of HHPS to improve the healthcare of patients. This study aims to evaluate the feasibility and the factors that will be important for the implementation of such a system from the doctors' viewpoint.

According to the International Organization for Standardization (ISO), the electronic medical record (EMR) is the repository of patient data in digital form, stored and exchanged securely and is accessible by multiple authorised users. [5] Previous studies have demonstrated that the EMR improves the quality of care, hence improving the efficiency of overall healthcare outcomes. [6,7] Improving patient related outcomes, reducing medical errors and improving the overall efficiency in healthcare settings have been achieved by the implementation of the EMR. [7,8] The majority of healthcare institutions in developing countries still use paper-based records for writing prescriptions for patients. These systems have been in existence for a long time. Unlike developed countries, EMR use is not widespread in all healthcare settings of developing countries like India. There is limited research literature available on doctors' perceptions about EMRs playing a role in the adoption of a HHPS in India. We hypothesise that using EMR would be instrumental in the successful implementation of HHPS in India due to the increased accessibility from remote areas.

Multiple questions have been raised regarding the widespread implementation of HHPS. Concerns include an increase in existing healthcare inequities along with the abandonment of patients by their physicians, based on income and ability to pay. [2] These systems have ill-defined payment systems, as they may be considered 'out of network' by most conventional insurance plans. [2] They may also pose a risk of insurance fraud due to the possibility of duplicate billing by the practising physicians, as most of the physicians have traditional practices as well. [2] Moreover, several of these practices can result in healthcare overuse. [2,7,8]

Despite these controversies regarding the benefits and risks associated with a HHPS, there appears to be scant evidence regarding the perceptions of doctors towards its use. The majority of articles represent anecdotal evidence or consensus statements. [2] A large proportion of HHPS physicians provided specialised services such as accompanied specialist visits, house calls, 24-hour physician access, same day appointments, coordinated hospital care, as well as private waiting rooms, which are often lacking in traditional physician practice. [2,12]

These are some of the reasons why HHPS is being contemplated by patients: after-hours access, same day scheduling and non-personal interactions. However, to the best of our knowledge, there is no systematic evaluation of doctor attitudes, beliefs and perceptions regarding HHPS and related systems available in the current literature. There is scant knowledge about the factors (i) affecting the enrolment of doctors into HHPS and (ii) influencing doctors to provide services through HHPS during non-office hours.
The HHPS could be initially planned as a local or a state-based system. Due to the unique payment structure that exists in India, where most patients are uninsured, the system could be planned as a 'fee for service system'. It is also possible to implement HHPS in a discrete geographic location as a 'subscription based' system. Under this system, all the members would be required to pay a fixed annual fee, depending on the clinical comorbidity burden, and could avail the HHPS services, on a need basis. Complex feasibility analysis based on the financial viability of these systems continues to be a potential research topic.

In a survey conducted in 2007, only 28% of patients had access to medical care during non-office hours. The patients would be able to access medical care only when the doctors were willing to provide services through in person office visits, or house calls or video conferences. Moreover, to the best of our knowledge, there is scant research on the importance of factors such as demographics (age and gender) of doctors likely to have interest in HHPS, and the benefits of information and communication technologies (ICT) in its implementation. With this background, we attempted to understand the needs, modes of accessibility, attitudes, and perceptions of doctors towards a system where different healthcare services can be utilised by doctors through a HHPS.

A few research perspectives have been identified earlier for consideration such as 'How much should a physician charge for a HHPS patient, and what service should the doctor

provide?'. [9] However, there is scant research literature available on these aspects. The research literature available on the importance of factors such as the demographics of doctors that may influence their enrolment for service provision through HHPS (in terms of age, gender, and number of patients they see every day), compatibility of the HHPS with the needs of doctors, and the benefits of ICT for the adoption of HHPS is also limited. In this paper, we have made an attempt to understand the importance of the above factors in adopting HHPS.

The research aims to understand the factors influencing the adoption of HHPS by doctors in India. The research questions that we have attempted to address in this paper include the following. (1) What factors influence the enrolment of doctors in HHPS? (2) What is the likelihood of doctors utilising HHPS during non-office hours? (3) What is the desire for extra remuneration for doctors to provide services through HHPS?

Methods

2.1 Study population

The study population consisted of doctors from government and private hospitals in India. The study was conducted at Government Medical College Hospital Kozhikode, Baby Memorial Hospital Kozhikode, Malabar Institute of Medical Sciences Kozhikode, Cradle (Apollo) Kozhikode, All India Institute of Medical Sciences New Delhi, and Metro Hospital Kozhikode. The human resource departments in the respective hospitals were instrumental in helping us circulate the surveys through online and paper-based media. In addition, we circulated the questionnaires online using Survey Monkey and popular social media websites like Facebook, Twitter and LinkedIn.

2.2 Study tool

The tool used for the study was a questionnaire. We did a thorough literature review to understand the various factors that might be significant for the adoption of HHPS. We consulted healthcare providers in the United States (where HHPS is in use) and in India to understand the factors that may be important in HHPS adoption and whether these factors are relevant in the Indian healthcare context. We designed a comprehensive iterative questionnaire to include all these factors in a simple and coherent fashion. The questionnaire was first circulated among ten doctors for feedback to ensure that all the questions were interpreted as intended. The questionnaire was then modified based on the responses from the initial sample of doctors involved. The questionnaires were initially disseminated through social media (Facebook, Twitter, and LinkedIn). We then disseminated the survey directly to doctors by visiting the local hospitals of Kozhikode city. We provided souvenirs in the form of books to doctors who took part in the study, as a token of appreciation for their time.

2.3 Study variables

The outcome variables considered for the adoption of a HHPS were the willingness of doctors to work during non-office hours, willingness of doctors to enrol into HHPS and the desire for increased remuneration for the doctors to work in HHPS. The independent variables that we have considered for the study are shown in Appendix A that appears at the end of this article.

2.4 Statistical Analysis

Statistical analysis was performed using Stata 12.1 (Stata Corporation, College Station, TX, United States). The Likert scales were collapsed to a dichotomous variable, 'important' (most important, important, and somewhat important) and 'not important' (least important, and less important) for this analysis. Differences in characteristics between the groups were tested for significance using the chi-square test. We performed a multivariable logistic regression analysis for the primary outcomes, after adjusting for all independent variables. Three separate regression models were constructed for the three outcome variables. Appendix A lists the different outcome and the independent variables considered for our study. We performed several subgroup analyses for each of the independent variables listed in the three tables based on age and gender.

Results

We collected a total of 32 responses from the online media, from which 18 (56.3%) of the responses were excluded because the participants were not from India. Hence there were 14 usable responses collected through online media. We collected 180 responses through paper-based questionnaires, out of which 14 (7.8%) responses were unusable, as doctors did not complete the questionnaires. A total of 180 (84.9%) responses that were collected through online and paper-based media were included in the study.

Figure 1 demonstrates age-based stratification of perceptions of doctors about the EMR and its role in adoption of HHPS.

Figure 1B demonstrates that doctors of age groups 35 to 44 (97.3%) (p=0.09) and greater than 44 years (95.7%) (p=0.001) were currently working in hospitals with EMR facilities.

Figure 1: Age-based stratification of perceptions of doctors on EMR and its role in adoption of HHPS

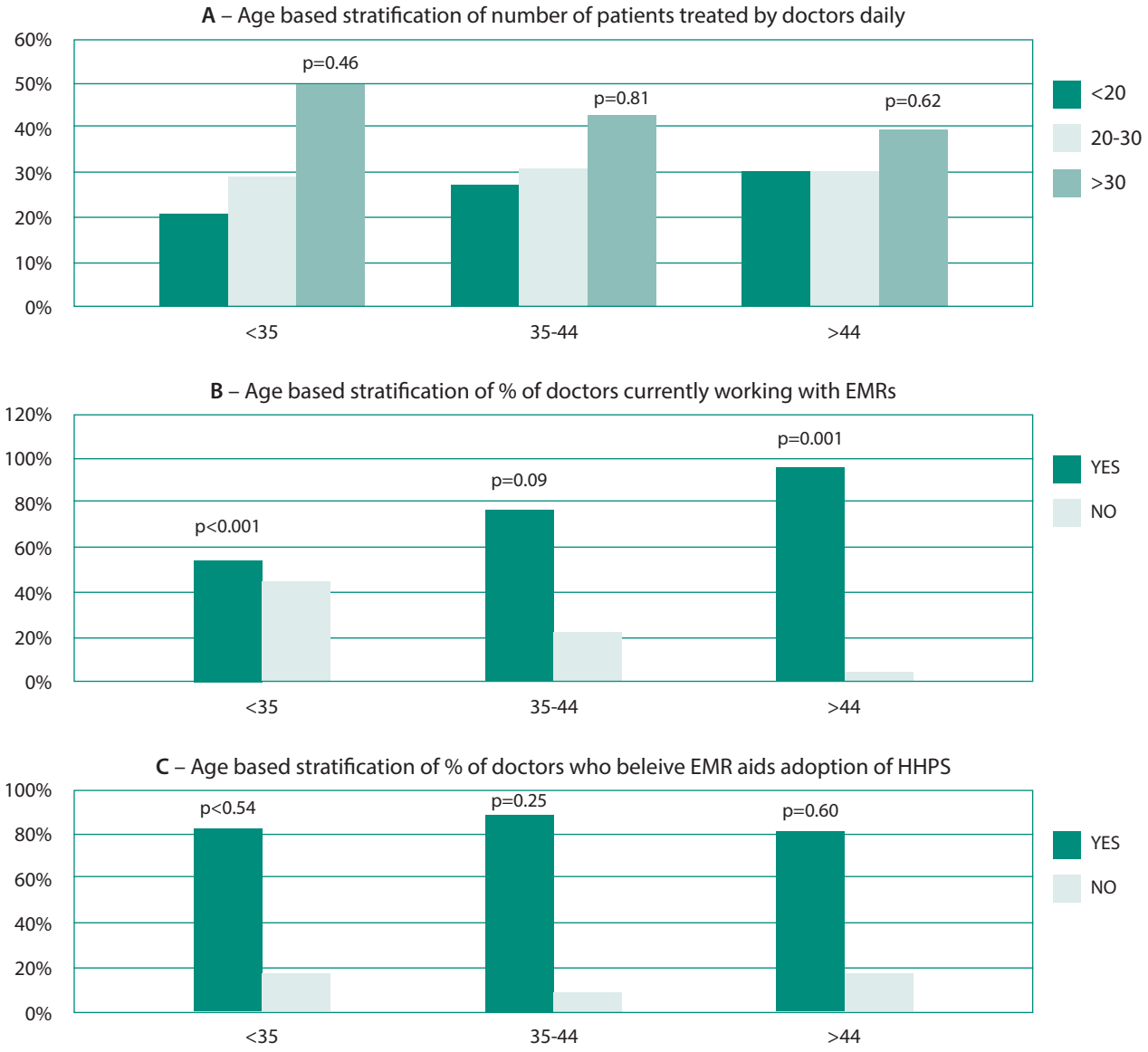


Figure 1C demonstrates that a large proportion of doctors in all age-based strata (p=0.54, 0.25, and 0.60 for age groups <35, 35-44, and >44, respectively) believed that EMR would aid HHPS adoption in India.

Figure 2 demonstrates gender-based stratification of perceptions of doctors about the EMR and its role in adoption of HHPS.

Figure 2A demonstrates that out of all doctors, 44.5% of the male doctors and 55.8% of the female doctors treated more than 30 patients every day in the current hospital (p=0.43).

Figure 2B shows that a large proportion of female doctors (69.3%) were currently working in hospitals with EMR facilities. Figure 2C demonstrates that a large proportion of doctors in all gender-based (p=0.31) believed that EMR would aid HHPS adoption in India.

Figure 2: Gender-based stratification of perceptions of doctors on EMR and its role in adoption of HHPS

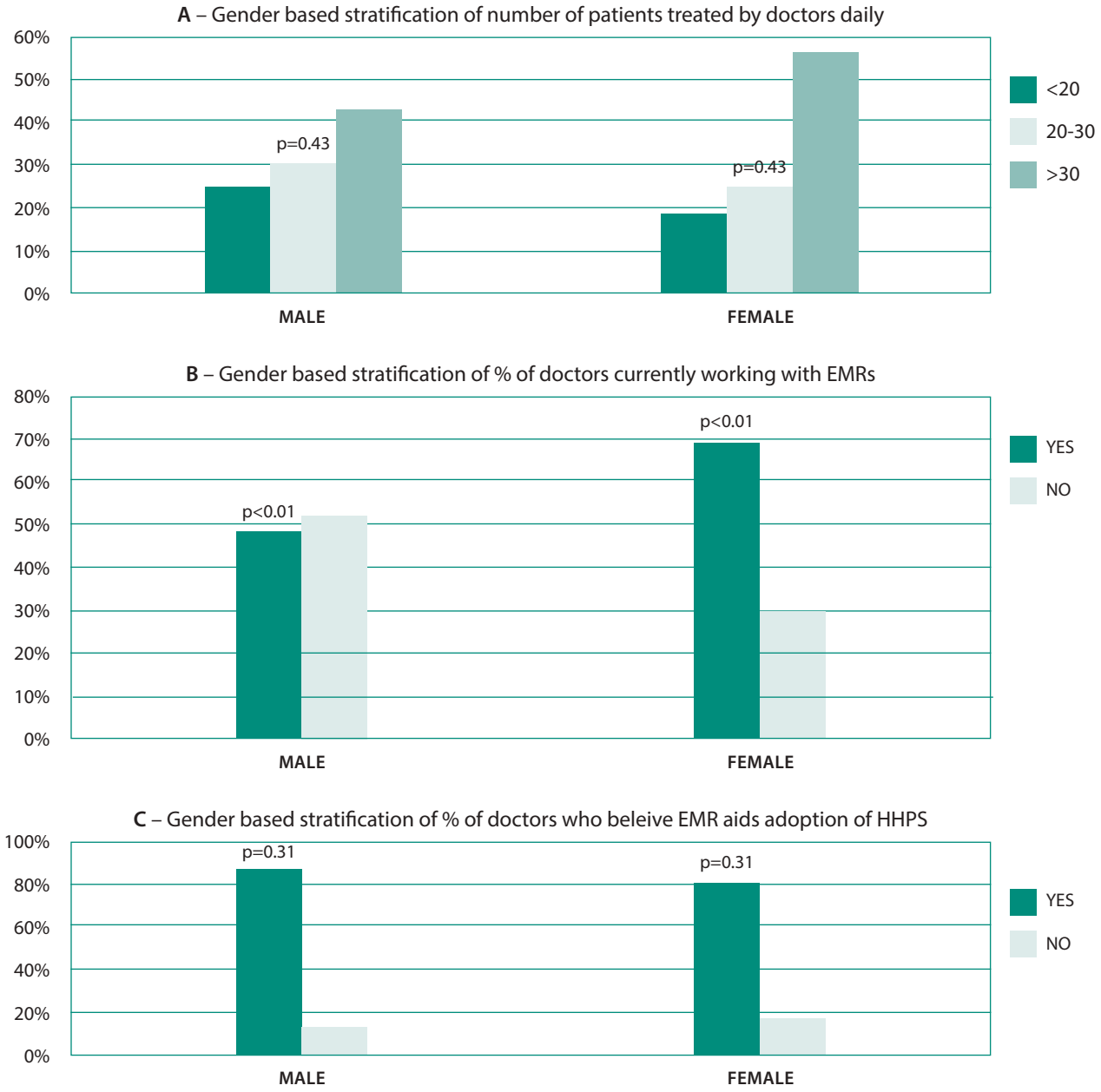


Figure 3 demonstrates the age-based stratification for willingness of doctors to provide services through HHPS.

Figure 3A demonstrates that 95.0% of doctors of <35 years (p=0.002), 78.4% of doctors of 35-44 years (p=0.008), and 82.6% of doctors of >44 years (p=0.206) were willing to enrol in HHPS.

Figure 3C demonstrates that a large proportion of doctors < 35 years of age (88.3%) (p<0.001) were willing to work during non-office hours compared to those of age groups 35-44 (56.8%) (p<0.001) and greater than 44 years (65.2%) (p=0.09).

Figure 3: Age-based stratification for willingness of doctors towards provisioning of service through a HH

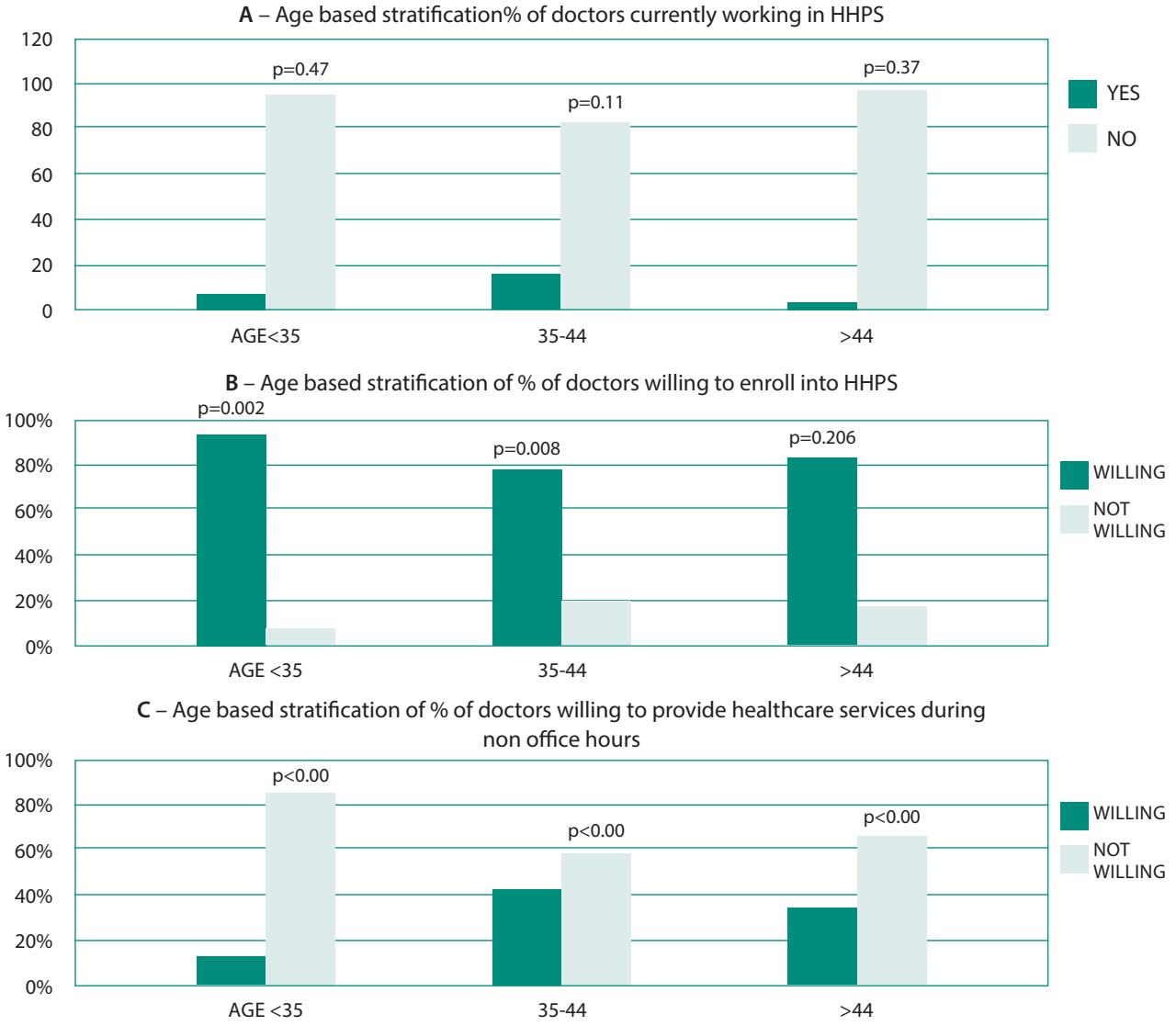


Figure 4 demonstrates gender-based stratification for willingness of doctors to provide services through HHPS.

Figure 4A demonstrates that a very small proportion of male (8.0%) and female (13.0%) doctors were currently providing services through HHPS (p=0.25).

Figure 4B demonstrates that a significant proportion of male (90.5%) and female (88.4%) doctors were willing to enrol in HHPS (p=0.68). A large proportion of male (81.0%) and female (72.1%) doctors were interested in working during nonoffice hours on weekdays and on weekends (p=0.21).

Figure 4: Gender-based stratification for willingness of doctors towards provisioning of service through a HHPS

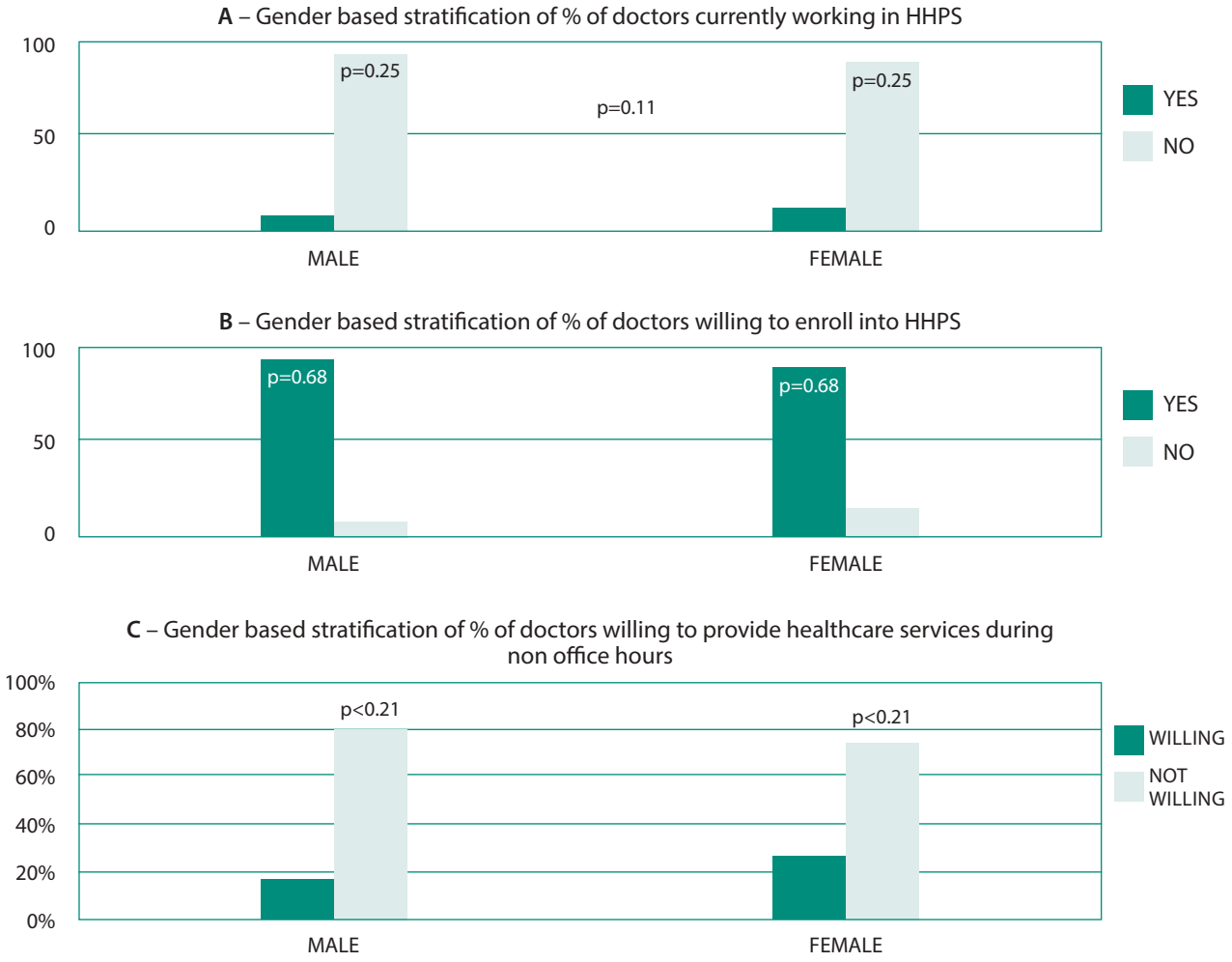


Figure 5 shows the perceptions of doctors about ICT and the other important factors in the adoption of HHPS.

Figure 5A demonstrates that 45.0% of doctors were aware of routine check up provision through HHPS.

Figure 5B demonstrates several factors doctors deemed important for successful adoption of HHPS in India. Of the total responses, 95.6% believed that HHPS would need to be compatible with the needs of the patient community for its successful adoption Similarly, 93.9% believed that HHPS would be successful if it could be easily integrated with the local hospital networks. In addition, 89.4% believed that a free trial for HHPS would be necessary before actually adopting this system. Furthermore, 89.4% of the doctors believed that accessibility of HHPS to interface remotely using hand-held devices would be a key factor for the successful adoption of this system. A large majority of doctors (79.4%) believed that an extra monetary credit for doctors would also be an important factor.

Figure 5C demonstrates that majority of doctors (88.3%) believed that hospital visits were important for follow-up on simple patient queries; several doctors believed that non-personal interactions might serve the purpose too in several cases. The proportion of doctors who believed that text messages, video chat, email or telephone calls may serve as important means of communication to respond to simple patient queries were 36.1%, 45.0%, 55.0% and 80.6%, respectively.

Figure 5: Perceptions of doctors about ICT and other factors important for the adoption of a HHPS

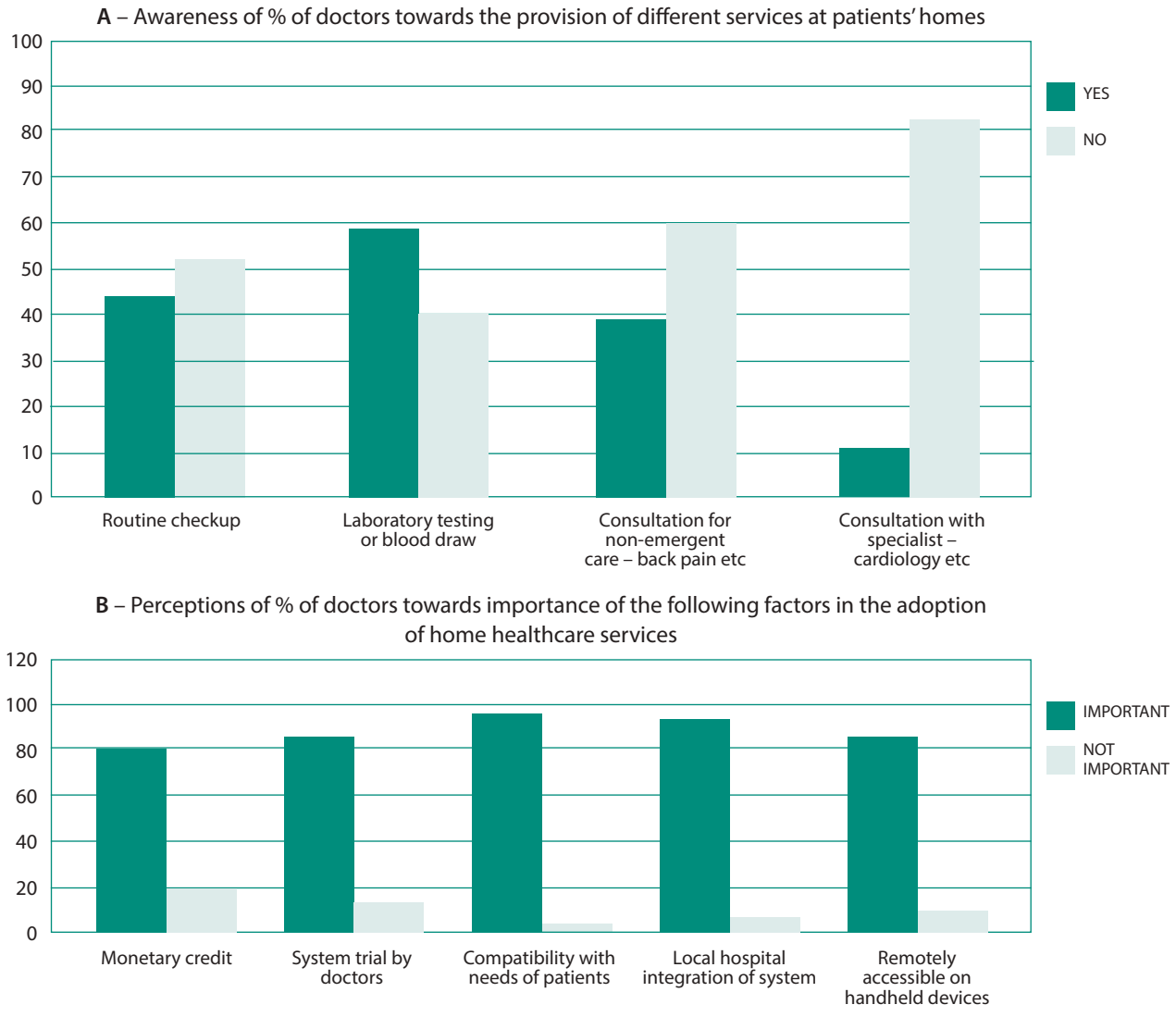


Figure 5: Perceptions of doctors about ICT and other factors important for the adoption of a HHPS *continued*

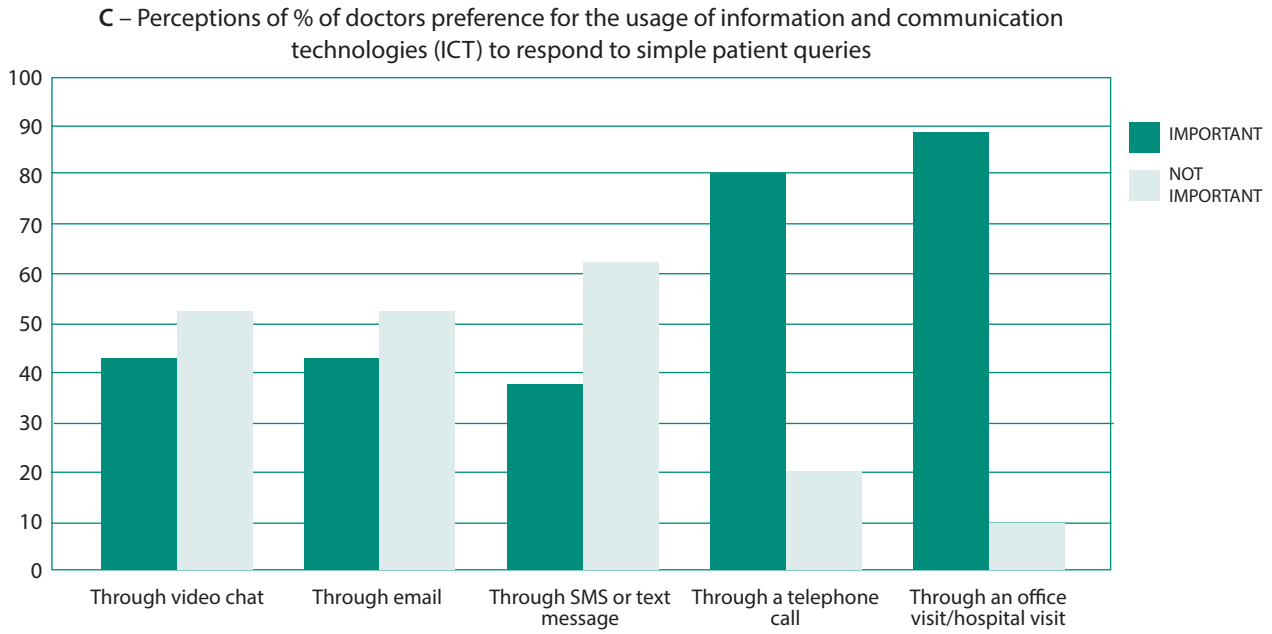


Figure 6 demonstrates the perceptions of doctors about costs, remuneration and important preferences of doctors for enrolment in HHPS. It can be seen from Figure 6A that a significant proportion of doctors (95.6%) desired an increase in remuneration. The proportion of doctors desiring a 20%, 40% or 50% increase for service provision through HHPS were 27.8%, 32.2%, and 28.30%, respectively.

Figure 6B shows the proportion of doctors expecting patients to pay 20%, 50%, and 100% extra for the service provision through HHPS were 21.7%, 20.0%, and 20.6%, respectively.

Figure 6C shows that a large percentage (54.40%) of doctors would enrol into HHPS upon a free trial.

Figure 6: Perceptions of doctors about costs, remuneration, and preference of enrolment into a HHPS

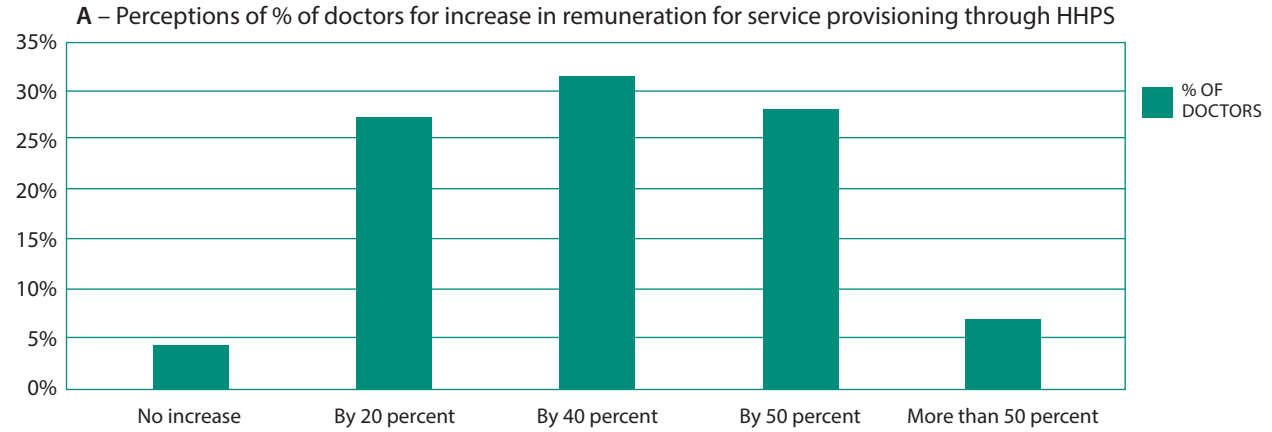
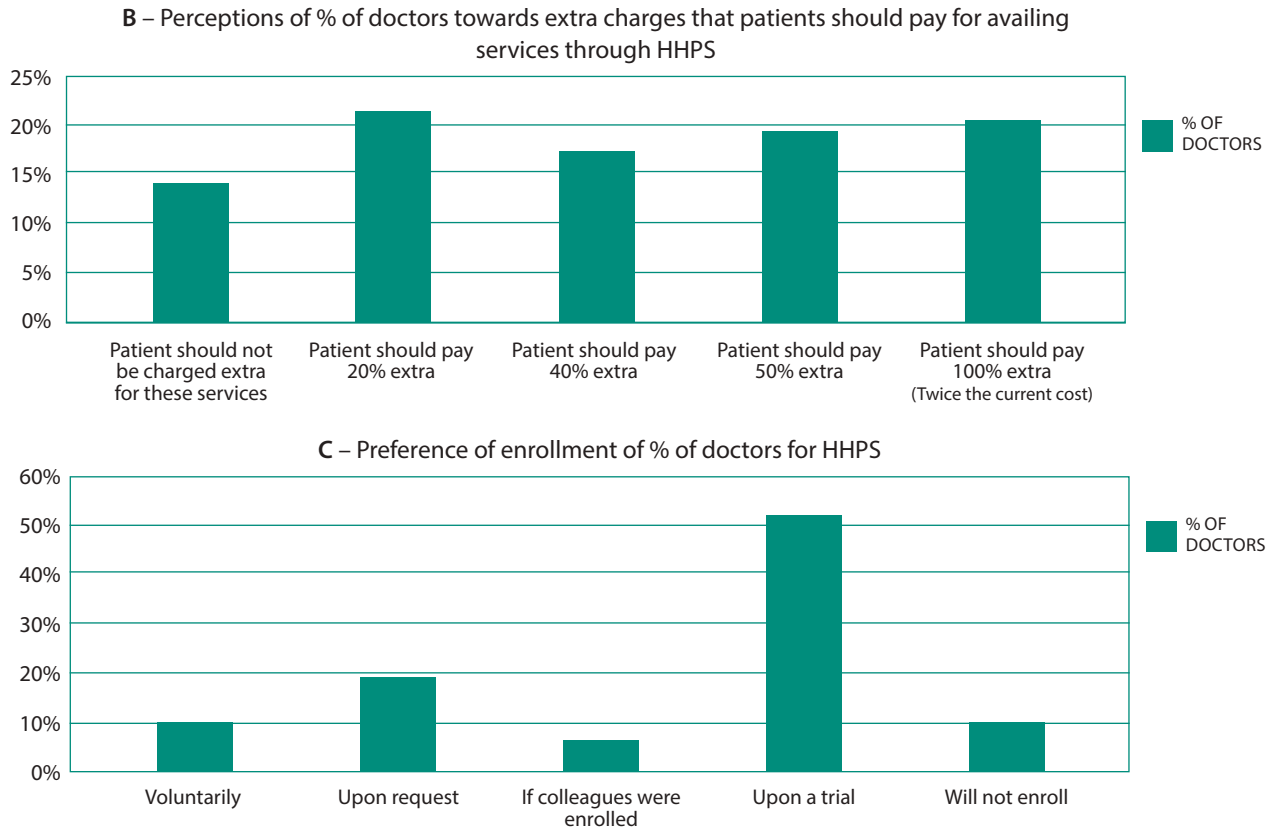


Figure 6: Perceptions of doctors about costs, remuneration, and preference of enrolment into a HHPS *continued*



Appendix A: List of outcome and independent variables

OUTCOME VARIABLES	INDEPENDENT VARIABLES
Willingness to work during non-office hours	Number of patients seen every day in the hospital
Desire for an increase in remuneration	Answering the follow-up queries by video chat or email
Willingness to enrol into HHPS	Answering the follow up queries through text message or telephone call
	The system leads into a trial by doctors before adoption
	The system is compatible with the needs of patients in the community
	The system is integrated with local healthcare system in hospital
	The system is accessible remotely on handheld devices to review patient history at patient's home
	Patients being charged extra for availing services through HHPS
	I currently work in a system that has EMR
	EMR simplifies the overall workflow
	EMR aids the adoption of HHPS
	Answer the follow up queries through a hospital visit
	Age
	Surgical specialties
	Male

Note: A few outcome variables were used as independent variables in the multivariate regression models

Appendix B lists the unadjusted comparisons stratified based on age. A significantly higher proportion of doctors >44 years of age (95.7%) were employed in hospitals currently using EMR (p<0.001). There was a significant variation in the desire for an increase in remuneration by age strata. Doctors aged 35-44 years, 51.4% of them and 43.5% of doctors aged >44 years expressed desire for >50% remuneration, which was significantly higher than the 29.2% of doctors under 35 years of age who desired >50% remuneration (p=0.03). In addition, a significantly larger proportion of young doctors (<35 years) (88.3%) were willing to work during non-office hours, as compared to their older counterparts (p<0.001). Furthermore, a significantly larger proportion of young doctors (95.0%) were willing to enrol in HHPS, as compared to other age strata (p=0.006).

Appendix B: Unadjusted comparisons based on different age groups

VARIABLES	<35 YEARS	35 TO 44 YEARS	> 44 YEARS	P-VALUE
Number of patients seen by the doctor every day in the hospital				
<20	20.8	27.0	30.4	0.51
20-30	29.2	29.7	30.4	0.99
>30	50.0	43.3	39.2	0.55
Answering the follow-up queries by video chat or email	82.5	89.2	87.0	0.58
Answering the follow up queries through text message or telephone call	59.2	75.7	60.9	0.19
Desire for an increase in remuneration:				
No increase in remuneration	3.3	2.7	13.0	0.006
By 20%	32.5	13.5	26.1	0.08
By 40%	35.0	32.4	17.4	0.25
By > than 50%	29.2	51.4	43.5	0.03
The system lends into a trial by doctors before adoption	90.8	83.8	91.3	0.45
The system is compatible with the needs of patients in the community	96.7	91.9	95.7	0.47
The system is integrated with local healthcare system in hospital	94.2	91.9	95.7	0.82
The system is accessible remotely on handheld devices to review patient history at patient's home	89.2	89.2	91.3	0.95
Patients being charged extra for homecare services	80.0	78.4	87.0	0.69
Willingness to work during non-office hours	88.3	56.8	65.2	<0.001
Surgical specialties	15.0	21.6	30.4	0.18
Answer the follow-up queries through a hospital visit	90.8	78.4	91.3	0.11
EMR aids the adoption of HHPS	85.0	91.9	82.6	0.49
EMR simplifies overall workflow	97.5	97.3 9	5.7	0.89
I currently work in a system that has EMR	54.2	75.7	95.7	<0.001
Willingness to enrol into HHPS	95.0	78.4	82.6	0.006

Appendix C demonstrates the unadjusted comparisons stratified based on gender. A significantly higher percentage of male doctors (67.2%) were interested in answering the follow-up queries through text message or telephone call (p=0.03), as compared to their female counterparts. Furthermore, a higher percentage of both male (92.0%) and female (81.4%) doctors considered that the system lending itself to a trial before adoption as an important factor for HHPS adoption (p=0.049). In addition, a significant large proportion of male doctors (69.3%) were currently working with a system that has EMR compared to their female counterparts (46.5%) (p<0.01).

Appendice C: Unadjusted comparisons based on gender

VARIABLES	MALE	FEMALE	P-VALUE
Number of patients seen by the doctor everyday in the hospital			
<20	24.8	18.6	0.40
20-30	30.7	25.6	0.52
>30	36.5	55.8	0.20
Answering the follow-up queries by video chat or email	83.9	86.1	0.74
Answering the follow up queries through text message or telephone call	67.2	48.8	0.03
Desire for an increase in remuneration:			
No increase in remuneration	4.4	4.7	0.68
By 20%	30.7	18.6	0.12
By 40%	28.5	44.2	0.05
By > than 50%	36.5	32.6	0.64
The system lends into a trial by doctors before adoption	92.0	81.4	0.049
The system is compatible with the needs of patients in the community	96.4	93.0	0.36
The system is integrated with local healthcare system in hospital	94.9	90.7	0.32
The system is accessible remotely on handheld devices to review patient history at patient's home	89.1	90.7	0.76
Patients being charged extra for homecare services	81.0	79.1	0.78
Willingness to work in non-office hours	81.0	72.1	0.21
Surgical specialties	21.2	9.3	0.08
Answer the follow-up queries through a hospital visit	87.6	90.7	0.58
EMR aids the adoption of HHPS	87.6	81.4	0.31
EMR simplifies overall workflow	96.4	100.0	0.20
I currently work in a system that has EMR	69.3	46.5	<0.01
Willingness to enrol into a HHPS	90.5	88.4	0.68

3.1 Multivariable analysis

Appendix D demonstrates the results from the multivariable logistic regression analysis of the various outcome variables with the chosen independent variables as shown in Table 1. The need for an increase in remuneration by 40% [OR: 140.2 (95% CI): 1.6 to 12595.0] and greater than 50% [OR: 101.7 (95% CI): 2.3 to 4556.4] for service provision through HHPS, HHPS being integrated with the local healthcare system in the hospital [OR: 33.7 (95% CI): 1.4 to 835.3], and answering simple patient follow-up queries through video chat or email [OR: 9.6 (95% CI): 1.0 to 90.6] were positively associated with the willingness of doctors to enrol in HHPS.

The need for an increase in remuneration by 20% [OR: 46.7 (95% CI): 2.9 to 765.4], 40% [OR: 101.7 (95% CI): 5.4 to 1930.9], and greater than 50% [OR: 10.4 (95% CI): 0.8 to 140.0] and interest in service provision through HHPS [OR: 9.8 (95% CI): 2.0 to 47.1] had a positive association with willingness to work during non-office hours. Factors such as willingness of doctors to work during non-office hours [OR: 340.2 (95% CI): 1.7 to 67721.0] and patients being charged extra for availing services through HHPS [OR: 25.2 (95% CI): 1.3 to 499.2] were found to be positively associated with a desire for increased remuneration among doctors in India.

Appendix D: Logistic regression over different outcome variables, * indicates statistical significance with p<0.05, ** indicates tending to statistical significance with 0.1<p<0.05

INDEPENDENT VARIABLES	ODDS RATIO	[95%CONF. INTERVAL]	P-VALUE
Outcome variable: Willingness to work in non- office hours			
Number of patients I see every day:			
<20		Reference	
20-30	0.2	0-1.0	0.05**
>30	0.3	0-1.5	0.13
Desire for an increase in remuneration:			
No increase		Reference	
By 20%	46.7	2.9-765.4	<0.01*
By 40%	101.7	5.4-1930.9	<0.01*
By > than 50%	10.4	0.8-140.0	0.08**
Interest in service provisioning by HHPS	9.8	2.0-47.1	<0.01*
Age:			
<35		Reference	
35-44	0.1	0-0.3	<0.001*
>44	0.2	0.1-1.1	0.07**
Male	3.9	1.1-14.8	0.04*
Outcome variable: Desire for an increase in remuneration			
Patients being charged extra for HHPS	25.2	1.3-499.2	0.03*
Willingness to work in non-office hours	340.2	1.7-67721.0	0.03*
Outcome variable: Willingness to enrol into HHPS			
Number of patients I see every day:			
<20		Reference	
20-30	0	0-1.7	0.09**
>30	0.1	0-4.4	0.22
Answering the follow-up queries by video chat or email	9.6	1.0-90.6	0.04*
Desire for an increase in remuneration:			
No increase		Reference	
By 20%	23.4	0.7-799.1	0.08**
By 40%	40.2	1.6-12595.0	0.03*
By > than 50%	101.7	2.3-4556.4	0.02*
The system is integrated with local healthcare system in hospital	33.7	1.4-835.3	0.03*
Willingness to work in non-office hours	42.5	3.3-539.1	<0.01*

Discussion

The objective of the study was to assess the knowledge, attitudes and perceptions of doctors in India regarding HHPS service provision. To the best of our knowledge, this is the first study of its kind. We have three salient findings:

1. The willingness of doctors to enrol in a HHPS was associated with a desire for increased remuneration. In addition, there was a positive association between increased need for remuneration and willingness of doctors to work during non-office hours. The other factors associated with willingness of doctors to enrol were willingness to answer follow-up queries by video chat or email, the integration of their system with a local healthcare system, and the willingness to work during non-office hours.
2. There was a significant age-based and gender based differential for willingness to work during non-office hours as a part of HHPS. It was likely that doctors under 35 years of age were more willing to work during non-office hours than the other age groups. Similarly, male doctors were more likely to be willing to work during non-office hours as compared to females. This suggests that young male doctors would most likely be the targeted employees for such systems in India.
3. Although a large majority of doctors indicated that hospital visits were important to follow-up on simple patient queries, several doctors indicated that simple patient queries in their practices could often be addressed using non-personal interactions like video chat or email.

The usage of the EMR improves the data quality, presentation, availability, along with doctor productivity. It reduces incorrect medications administered to patients, data input errors and increases quality assurance. [10,11,13,14] This may be an important factor when the physicians offer healthcare services from a distance through different means of communication such as emails, telephones, and text messages. The use of EMR also increases treatment quality by increased exchange and flow of information between monitoring and administrative functions, compliance with the regulations and the ability to integrate graphic data such as electrocardiograms, alarms and warning systems. [10,11,13,14] This increases the ability of physicians to make right diagnoses for patients. EMR usage reduces the mortality rate of patients. [13] It also saves physician and personnel time, and reduces transcription costs. [15,16] The use of EMRs may prove to be beneficial for the adoption of HHPS in India.

There is extremely limited access to medical care in India because the majority of people in India live below the poverty line. Moreover, India's healthcare industry lacks a medically insured population; and hence, there are high out of pocket expenditures. [26]

In addition, secondary/tertiary and outpatient care is also in need of improvement. Most of the time, patients are hesitant to approach primary care doctors and pursue specialist consultations instead. This increases the burden on the specialist doctors as they have less time to diagnose these patients.

The insurance payment structure is almost exclusively retroactive in India. [25] There is a need for a change in the payment structure so that the beneficiaries are covered for medical costs upfront, instead of them incurring all the expenditure and waiting for longer periods of time to get reimbursed. The state-sponsored or community health insurance plans provide coverage for inpatient primary care. [25] Outpatient coverage or payments for preventative primary care are virtually non-existent and there is a lack of universal healthcare coverage in India.

Many concierge physicians use telephone and email to communicate with their patients. [17] On the other hand, many doctors also avoid email and telephone consultations because the insurers do not reimburse them for phone or email consultations. [18] Some of the barriers to the implementation of Health Information Technology (HIT) systems in India include difficulty in understanding how the systems work and uncertain financial benefits in the face of high upfront costs. [6] The EMR and the Internet could improve doctor/patient communication and patient compliance. [19] The improvement in communication could potentially increase the overall benefits for both doctors and patients. Moreover, EMRs could also improve decision-making, thus increasing compliance for patients. HIT system design should take into account how clinicians work. [20] This may be important to increase the usage of systems by the clinicians and thus increase the overall advantage for patients. Moreover, software developers should also allow systems to be tailored to the special needs of patients and providers. [21] This would prove beneficial for both doctors and patients.

The major point of concern regarding concierge practice for a few physicians is that they may encounter peer disapproval. [22] Peers can have a positive or negative influence on providers willing to practise through a HHPS. Both physicians and patients could benefit when the system is adopted in

areas where the likelihood its usage is higher. Concierge medicine is likely to be adopted in areas where older people live. [23] Moreover, the need for the system among patients is important, and it may also be important for the successful adoption of HHPS. It is very likely that patients who call their primary care physicians during evenings or weekends are unable to obtain care. [24] However, it is important for the physicians to be willing to provide services during the time when the patients require these services. Many of the chronic and preventive care issues can be handled by telephone calls or email encounters. [24]

Research on the perceptions of doctors regarding the development of HPPS is scant. Moreover, little research exists on the effectiveness of HHPS. The first factor is the willingness of doctors to enrol in HHPS, which also influences the functioning of HHPS and is based on the desire for an increased remuneration. The second important factor for the functioning of HHPS is the willingness of doctors to work during non-office hours. The third factor is the desire for an increased remuneration among doctors for providing healthcare services, which influences the functioning of doctors during non-office hours. The desire for an increase in remuneration among doctors is co-expressed with the thought that patients should be charged extra for these services. The perceptions of doctors regarding increased remuneration were also associated with them answering the follow-up queries through text message or telephone call.

There are several potential implications for implementing HHPS in a developing nation like India. First, HHPS will ensure round the clock availability of doctors for patients. This may reduce the number of deaths that may arise because of critical cases. Secondly, HHPS will reduce the burden on doctors due to hospital visits, as they will be able to answer simple patient queries through email or telephone calls. This will help patients to avoid hospital visits in case of minor issues. And, this will ensure that the patients in need of care are being diagnosed accurately. Thirdly, establishment of a HHPS might serve to establish 'gatekeeper' physicians for patients enrolled in the system. [2] A HHPS physician may examine a patient's medical condition and make referrals to specialists, when necessary. [2] This likely would avoid self-referrals (which is common in India), reduce burden on specialist offices and reduce healthcare costs substantially.

Limitations

This study is limited to the perceptions of doctors toward the provision of healthcare services at patients' homes. It also did not look at the challenges during and after the implementation of HHPS, which could be a topic of future research. The sample for the study was collected through convenience sampling, which is a major limitation of the study. Moreover, the impact of socioeconomic status of patients, which would largely govern the adoption of HHPS could not be studied at this time.

Conclusions

Our study has assessed the determinants and beliefs of doctors in India and would be instrumental in adopting HHPS on a large scale. The desire for extra remuneration is found to be the primary reason for the willingness of doctors to work during non-office hours and thus to enrol in HHPS. The HHPS can ensure round the clock availability of doctors for patients, which can reduce the number of deaths that may arise because of critical cases in countries like India. The HHPS physician can make referrals to specialists when necessary which would avoid self-referrals and reduce burden on specialist clinics.

Competing interests

The authors declare they have no competing interests.

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RESEARCH ARTICLE

Correlations and Organisational Effects of Compensation and Benefits, Job Satisfaction, Career Satisfaction and Job Stress in Public and Private Hospitals in Lucknow, India

N Saxena and H Rai

Abstract

The present study compares the organisational effect of compensation and benefits in public and private hospitals. It was observed that private hospital employees were more satisfied with their compensation and benefits as compared to the employees of government hospitals. Furthermore, the employees who were satisfied with their compensation and benefits were also found to be satisfied with their jobs.

Abbreviations: **HR – Human Resources.**

Key words: **compensation and benefit, career satisfaction; job satisfaction; job stress; private hospitals; public hospitals.**

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Introduction

Societies and governments across the globe look upon healthcare as service first and industry second. The enormous growth in medical science due to technological advancements has given more power to professionals working in this sector to understand medical problems with greater efficacy and cost-effectiveness than ever before. Healthcare faces the ever present challenge of improving its productivity as well as cost-effectiveness through the development of its Human Resource (HR) capability. This is achieved by managing the expertise of professionals through education, research and training as well as maintaining their motivation through the availability of facilities, compensation and benefits, legal and organisational support, and constructing an environment conducive to relationships between clients from various areas.

The healthcare industry in India is flourishing with a double-digit growth rate that is expected to continue into the future. This is concerning given that deficiencies like the lack of comprehensive infrastructure and poorly defined services in the regularisation of the private healthcare sector in Bangladesh after its rapid expansion has reportedly led to dissatisfaction from consumers. [14] For India to meet international standards and to provide cost-effective health solutions, proactive participation of the government and private sector is required.

Best HR practices are important to such places where training, motivating and retaining professionals is the backbone of their operation. With that consideration, the present study investigates healthcare professionals' perception of job satisfaction in view of their compensation and benefits and suggests recommendations with regard to career satisfaction and job stress.

Literature review

India does not score well in the area of healthcare services. In the state of Rajasthan, a case study of thirty small hospitals by Kumar et al [7] revealed a kind of casual approach to managing HR functions. At fifteen out of thirty hospitals, the physician or the owner was in charge of the governance activity without any conventional training in HR functions. In eight other hospitals, HR management was the duty of the non-medical spouse of the doctor entrepreneurs. Case

leads in eighteen hospitals showed that they lacked a HR management/development specific activity. Fields such as the development and welfare of employees, performance estimation, workforce planning and so on were considered important but not handled in an organised manner. [7] Similar effects have been apparent from various studies conducted abroad, such as in Pakistan by Lalani [8] and the British healthcare sector by Bach [1] reflecting the vital importance of HR management practices.

HR functions relate to HR outcomes in terms of patient care and the maintenance of hospital assets, profitability and productivity. Research in the healthcare industry has demonstrated that the proper distribution of compensation and benefits is of crucial importance. [11,3]

Competitive compensation and benefits for healthcare employees help to increase their motivation levels, which in turn improves functioning and impacts positively on the retention of a talented workforce. [11] The shortage of physicians, nurses and hospital administrators in the rural healthcare sector can be overcome by offering attractive pay packages. [18] A lucid and objective compensation and benefits system helps to improve the morale of employees and increase their public presentation through its proper management. [3]

Efficient HR practices result in job satisfaction and organisational commitment in employees. [19] Managers and hospital administrators should plan and implement effective health policies in order to meet the unique needs of their staff and organisations. [2] Job stress and poor career opportunities results in an increase in the rate of employee absenteeism. [17,9] An overall awareness about HR management is found to be lacking consistency and uniformity across the globe, especially in less developed countries.

To the best of our knowledge, there is no Indian study that compares compensation and benefits and their affect on job satisfaction, career satisfaction and job stress experienced by employees of private hospitals to that experienced by government hospital employees in the Indian health sector. Therefore, the present study has been undertaken to find out if there is any difference between compensation and benefits and their affect on the job satisfaction, career satisfaction and job stress among the employees of private and government hospitals.

Research method

Sample and survey procedure

The current study includes ten hospitals in the city of Lucknow. Of these, five are government hospitals and the remaining five are private. In each of the hospitals the personnel to be interviewed were organised in three categories: a) Administrators b) Doctors c) Nurses. As far as possible in each of these sub-groups nearly equal numbers of personnel were included. They were interviewed on the basis of a closed standard questionnaire (having options based on a 5-point Likert scale). Out of 260 questionnaires 80 were allotted to the administrators, 90 to the doctors, and 90 to the nurses. Forty-five administrators responded to the instrument with a response rate of 56%, 81 doctors with a response rate of 90% and 77 nurses with a response rate of 85%. In total 203 employees were interviewed.

Measures

The survey instrument was chosen based on robust psychometric properties and the items used in the study were:

Compensation and Benefit scale (26 items), developed by Bergmann et al, 1999. The scale is taken from the paper 'The Pay Procedures: what makes them fair?' from the *Journal of Occupational and Organisational Psychology*. This measures the human psychology in an organisation related to compensation and benefits and is therefore appropriate for our study.

Job Satisfaction Scale (7 Items), developed by Bowers et al 1974. This measure is taken from the paper 'The Experience of Work: a compendium of 249 measures and their use. London'. It is the most commonly used and reliable scale for determining the level of job satisfaction among the employees.

Career Satisfaction Scale (5 Items), developed by Greenhaus et al, 1990. This measure was taken from the paper 'The Effects of Race on Organisational Experiences, Job Performance Evaluation and Career Outcomes' from the *Academy Of Management Journal*. We have used this scale for our study as it measures the satisfaction with the career success and also assesses the extent to which an employee has made satisfactory progress towards goals for advancement, income level and development of his/her expertise.

Job Stress Scale (15 Items), developed by House et al, 1979. This scale was taken from the paper 'Occupational Stress and Health among Factory Workers' from the *Journal of Health and Social Behavior*. We found it appropriate since it measures the frequency with which employees are perturbed by stressful occurrences. It includes five subscales that assess the extent of occupational stress due to job responsibilities, quality concerns, role conflict, job vs. non-job conflict and workload.

Job Stress Scale was further subdivided into five major items which were:

(i) Responsibility pressure: illustrates the stress experienced by an employee in carrying out his/her or other's job responsibility, either because the work involves risk or the lack of assistance.

(ii) Quality concern: explains the level of stress due to jeopardisation in the quality of work because of more quantity or lack of standards reached.

(iii) Role conflict: the stress due to the lack of compatibility in fulfilling the different expectations of others.

(iv) Job vs. Non-Job conflict: the stress resulting from the conflict between work and family roles.

(v) Workload: the stress resulting from large amounts of work assigned to or expected from an employee in a specific period of time.

The Compensation and Benefits Scale was divided into the following four major items:

(i) Supervision Support: the support that an employee's supervisor provides in relation to the compensation and benefits received.

(ii) Accuracy: explains the correctness on the part of the supervisor while administering the compensation and benefits.

(iii) Process control: explains the involvement of the employees in the process of calculation and distribution of compensation and benefits.

(iv) Justification: the justification given to the employees to clarify their queries related to the calculation and distribution of their compensation and benefits.

Results

All variables were coded, computed and the data was analysed using various statistical measures such as regression, correlational statistics and ANOVA.

The summary of the analysis of the demographic variables has been depicted in Table 1.

Table 1 indicates that there were 84.4% married employees in public hospitals and 59% in private hospitals. An age-wise distribution of employees in various hospitals shows that more employees of government hospital fall in the age group of 30-40 years while in the private hospitals, more employees were in the age group of 20-30 years. The results indicated that on an average, private hospital employees were younger as compared to those of government hospitals. Table 1 also indicates that males outnumbered females both in the government hospitals as well as in private hospitals. Qualification-wise distribution shows that the maximum number of individuals who filled up the

Table 1: Summary of the analysis of demographic variables

MARITAL STATUS	PUBLIC HOSPITALS	%	PRIVATE HOSPITALS	%	TOTAL EMPLOYEES
Unmarried	16	15.53	41	41	57
Married	87	84.46	59	59	146
AGE IN YEARS					
20-30	20	19.41	55	55	75
30-40	29	28.15	23	23	52
40-50	26	25.24	11	11	37
50-60	27	26.21	4	4	31
60-70	1	0.97	7	7	8
70-80	0	0	0	0	0
SEX					
Male	57	55.35	55	55	112
Female	46	44.66	45	45	91
HIGHEST EDUCATIONAL QUALIFICATION					
Diploma	21	20.38	25	25	46
Graduation	22	21.35	26	26	48
Masters	55	53.39	44	44	99

questionnaire belonged to a higher qualification category: Masters degrees such as MD, MS, MA, M.Sc. etc; followed by graduates (that is Medical Graduates, Bachelors of Science or Arts etc.) and diploma holders (General Nursing, Midwifery (G.N.M), etc.) and then higher degree holders such as PhD, M.Ch.etc.

The results shown in Table 2 indicate that all the scales and subscales are reliable.

Similarly, Table 4b shows a significant and positive relationship between compensation and benefits and career satisfaction (p=0.0001). Employees who were satisfied with their compensation and benefits were also found to be satisfied with their career. Among the components of compensation and benefits process control items (p=0.006) and the justification items (p=0.053) were found to be significantly and positively related to job satisfaction as shown in Table 4c.

Table 2: Chronbach's alpha value of various scales and subscales

VARIABLES	JOB SATISFACTION	CAREER SATISFACTION	JOB STRESS	JOB STRESS (RESPONSIBILITY PRESSURE ITEM)	JOB STRESS (QUALITY CONCERN ITEM)	JOB STRESS (ROLE CONFLICT ITEM)	JOB STRESS (JOB VS NON-ITEM)	JOB STRESS (WORKLOAD ITEM)	COMPENSATION AND BENEFITS	COMPENSATION AND BENEFITS (SUPERVISION SUPPORT ITEMS)	COMPENSATION AND BENEFITS (ACCURACY ITEMS)	COMPENSATION AND BENEFITS (PROCESS CONTROL)
Chronbach's alpha	0.8	0.81	0.85	0.64	0.68	0.62	0.68	0.82	0.96	0.92	0.94	0.96

Table 3: Correlation values of Job Satisfaction, Career Satisfaction, Job Stress and Compensation and Benefits

Job Satisfaction `	1			
Career Satisfaction	.518**	1		
Job Stress	-.192**	0.047 1	1	
Compensation and Benefits	.357**	.255**	0.017	1
	Job Satisfaction	Career Satisfaction	Job Stress	Compensation and Benefits

As shown in Table 3, compensation and benefits have been found to be correlated with job satisfaction and career satisfaction, yet no correlation was observed with job stress. The employees who were satisfied with their compensation and benefits were also found to be satisfied with their job (r=0.36) and career (r=0.26).

As per the results of regression analysis as shown in Table 4a, the independent variable compensation and benefits was found to be positively and significantly related to the dependent variable job satisfaction (p=0.0001). Employees who were satisfied with their compensation and benefits were also found to be satisfied with their jobs.

This shows that higher the involvement of the employee in the process of calculation and distribution of compensation and benefits, the more likely he/she was to be satisfied with his/her job. If an organisation follows a transparent system of providing compensation and benefits to the employees, by forwarding legitimate justifications regarding queries on the calculation and distribution of the same, it is seen to result in employees being satisfied with their jobs. Analysis of job stress with compensation and benefits using regression revealed no significant relationship between the two parameters.

Table 4a: Regression result of compensation and benefits, and job satisfaction

MODEL SUMMARY				
MODEL	R	R SQUARE	ADJUSTED R SQUARE	STD. ERROR OF THE ESTIMATE
1	.357[a]	0.127	0.123	0.60667

[a.] Predictors: (Constant), Compensation and Benefits

COEFFICIENTS[a]						
MODEL	UNSTANDARDIZED COEFFICIENTS			STANDARDIZED COEFFICIENTS	T	SIG.
	B		STD. ERROR	BETA		
1	(Constant)	2.881	0.171		16.864	0.0001
	Compensation and Benefits	0.29	0.054	0.357	5.417	0.0001

[a.] Dependent Variable: Job Satisfaction

Table 4b: Regression result of compensation and benefits and career satisfaction

MODEL SUMMARY				
MODEL	R	R SQUARE	ADJUSTED R SQUARE	STD. ERROR OF THE ESTIMATE
1	.235[a]	0.065	0.6	0.77715

[a.] Predictors: (Constant), Compensation and Benefits

COEFFICIENTS[a]						
MODEL	UNSTANDARDIZED COEFFICIENTS			STANDARDIZED COEFFICIENTS	T	SIG.
	B		STD. ERROR	BETA		
1	(Constant)	2.79	0.219		12.748	0.0001
	Compensation and Benefits	0.256	0.069	0.255	3.732	0.0001

[a.] Dependent Variable: Career Satisfaction

Table 4c: Regression results of supervision support, accuracy, process control and justification items of compensation and benefits and job satisfaction

MODEL SUMMARY				
MODEL	R	R SQUARE	ADJUSTED R SQUARE	STD. ERROR OF THE ESTIMATE
1	.368[a]	0.136	0.118	0.60837

[a.] Predictors: (Constant), compensation and benefits (justification item), Compensation and benefits (process control item), Compensation and benefits (accuracy item), Compensation and benefits (supervision support item)

Table 4c: Regression results of supervision support, accuracy, process control and justification items of compensation and benefits and job satisfaction *continued*

COEFFICIENTS[a]						
MODEL		UNSTANDARDIZED COEFFICIENTS		STANDARDIZED COEFFICIENTS	T	SIG.
		B	STD. ERROR	BETA		
1	(Constant)	2.895	0.174		16.623	0.0001
	Compensation and (supervision support item)	0.032	0.076	0.046	0.414	0.679
	Compensation and benefits (accuracy item)	0.036	0.078	0.05	0.464	0.643
	Compensation and benefits (process control item)	0.126	0.046	0.213	2.761	0.006
	Compensation and benefits (justification item)	0.095	0.049	0.158	1.948	0.053

[a.] Dependent Variable: Job Satisfaction

Analysis of the data by ANOVA produced the following results:

Table 5a shows one way ANOVA result of compensation and benefits by the type of hospital. It reveals that the compensation and benefits differed significantly between public and private.

As illustrated in the Table 5b, job satisfaction level differed significantly between males and females (p=0.008).

As shown in Table 6a the type of hospital was significantly and positively related to job satisfaction. Private hospital employees were found to be more satisfied with their jobs as compared to those of government hospitals (p=0.02).

As shown in regression Table 6b, when the sex of the personnel was related to job satisfaction, it was observed that males were more satisfied with their jobs as compared to females (p=0.13). According to the data collected, 66% of

Table 5a: One way ANOVA result of compensation and benefits by the type of hospitals

		SUM OF SQUARES	DF	MEAN SQUARE	F	SIG
Compensation and Benefits	Between Groups	12.613 1	1	2.613	21.967	0.0001
	Within Groups	115.414	201	.574		
	Total	**128.027**	**202**			

Table 5b: One way ANOVA result of job satisfaction by sex of the employee

		SUM OF SQUARES	DF	MEAN SQUARE	F	SIG
Job Satisfaction	Between Groups	2.892	1	2.892	7.098	0.008
	Within Groups	81.886	201	0.407		
	Total	**84.778**	**202**			

the females were married and about 49% were above the age of 30. The score of job satisfaction for females was found to be low. Also, it illustrates the same results as given in Table 6a, above, that private hospital employees were found to be more satisfied with the compensation and benefits than those of government hospitals (p=0.0001).

Discussion

The present study was undertaken to compare the effect of compensation and benefits on job satisfaction, career satisfaction and job stress. The application of HR management practices in the healthcare industry is a relatively new concept of the current century. To-date there have been some superficial attempts to incorporate HR

Table 6a: Regression result of type of hospital, marital status, age, sex, highest educational qualification, total work experience, experience in the current job and job satisfaction

MODEL SUMMARY				
MODEL	R	R SQUARE	ADJUSTED R SQUARE	STD. ERROR OF THE ESTIMATE
1	.276[a]	0.076	0.043	0.63383

[a.] Predictors: (Constant), Experience in the Current Job, Sex, Marital Status, Type of Hospital, Highest Educational Qualification, Total Work Experience, Age

COEFFICIENTS[a]						
MODEL		UNSTANDARDIZED COEFFICIENTS		STANDARDIZED COEFFICIENTS	T	SIG.
		B	STD. ERROR	BETA		
1	(Constant)	3.372	0.178		18.931	0.0001
	Type of Hospital	0.232	0.099	0.179	2.346	0.02
	Marital Status	-0.024	0.119	-0.017	-0.201	0.841
	Age	0.133	0.089	0.25	1.492	0.137
	Sex	0.251	0.1	0.193	2.505	0.013
	Highest Educational Qualification	-0.018	0.06	-0.025	-0.306	0.76
	Total Work Experience	-0.001	0.001	-0.228	-1.399	0.163
	Experience in the Current Job	0.001	0.001	0.151	1.664	0.098

[a.] Dependent Variable: Career Satisfaction

Table 6b: Regression result of type of hospital, marital status, age, sex, highest educational qualification, total work experience, experience in the current job and compensation and benefits

MODEL SUMMARY				
MODEL	R	R SQUARE	ADJUSTED R SQUARE	STD. ERROR OF THE ESTIMATE
1	.359[a]	0.129	0.097	0.75641

[a.] Predictors: (Constant), Experience in the Current Job, Sex, Marital Status, Type of Hospital, Highest Educational Qualification, Total Work Experience, Age

Table 6b: Regression result of type of hospital, marital status, age, sex, highest educational qualification, total work experience, experience in the current job and compensation and benefits *continued*

COEFFICIENTS[a]						
MODEL		UNSTANDARDIZED COEFFICIENTS		STANDARDIZED COEFFICIENTS	T	SIG.
		B	STD. ERROR	BETA		
1	(Constant)	2.865	0.213		3.479	0.0001
	Type of Hospital	0.537	0.118	0.338	4.562	0.0001
	Marital Status	-0.166	0.141	-0.094	-1.17	0.243
	Age	0.088	0.107	0.134	0.824	0.411
	Sex	-0.107	0.12	-0.067	-0.898	0.37
	Highest Educational Qualification	-0.042	0.072	-0.047	-0.59	0.556
	Total Work Experience	0	0.001	0.039	0.243	0.808
	Experience in the Current Job	7.80E-05	0.001	0.009	0.105	0.917

[a.] Dependent Variable: Compensation and Benefits

practices into this sector as found in studies done in various countries: for example, in India by Kumar et al, [7] Pakistan by Lalani [8] as well as in western countries like the United Kingdom by Bach [1] and the United States by Long. [10] However, it has been emphasised that efficient HR practices are crucial for improving the quality of healthcare. In the present study, it was observed that none of the government hospitals had an HR department to look after the interests of their employees. Instead, the directors or medical superintendents were looking after HR practices, while they did not have an adequate knowledge about HR management. All these people were basically doctors who were busy treating their patients and additionally loaded with other clinical work. These personnel have hardly any time to look after the tasks of HR management. Similar observations have also been made by Kumar et al [7] and Lalani. [8] In our survey, 80% of the private hospitals had an HR department/section responsible for the recruitment, selection, preparation, performance assessment, along with managing the compensation and benefits of personnel. We observed higher levels of job and career satisfaction in private hospital employees due to greater satisfaction with the compensation and benefits by private hospital employees as compared to government hospital employees. Among the items of compensation and benefits, process control item and the justification item had the most significant impact on job satisfaction. In the present study, a greater number of younger people with less work experience were found to be employed in private hospitals as compared to government hospitals, probably due to stringent recruitment and selection processes followed by government hospitals.

A fair and transparent process of calculation and distribution of compensation and benefits would likely result in greater job satisfaction, career satisfaction, and hence, lower levels of job stress for employees.

The present study also found that the male respondents were more gratified with their jobs than were female respondents. This may be due to the prevalent patriarchal system in Indian society that bestows certain advantages, status and privileges on the male at the expense of females. Nevertheless, it is a mark of enormous social progress that more and more women are receiving better training and are being developed to undertake professional duties. And yet, frequently enough, women engaged in professional work still have to fulfill household duties without getting much or any contribution from their spouse. As a result of this, they are often overworked which contributes to lower levels of job satisfaction while their male counterparts usually assume major roles in the workplace. This has also been reported by Khuwaja et al [6] in Pakistan, Kaptanoglu et al [5] and Ronald et al [16] in Turkey and Patrick et al [13] in Russia, where female physicians tend to be absent more

frequently and reported more psychosomatic problems and work-family conflict than their male counterparts due to time constraints posed by their hospital duties. Additionally, female workers, especially the nursing staff which is largely comprised of women, are more prone to physical assaults. [16]

The present study has some limitations. A larger sample size could possibly make the study more robust. Thus the study needs to be extended to a larger number of hospitals in the country in order to reach a definite conclusion as to how compensation and benefits impact the performance of hospitals, both private and public. Other HR practices could also be included in future studies to analyse their effect on the job satisfaction, career satisfaction, and job stress experienced by the employees of an organisation.

Conclusion

The study builds on a body of work that stresses on the importance of HR functions as the key contributors to the performance and growth of organisations, particularly healthcare. Effective HR management means recruiting and selecting a suitable workforce, ensuring that employees are adequately trained and that work is appropriately assigned, while also keeping them motivated through the process of proper incentivising, compensation and benefits, among other things.

Compensation and various types of benefits which include disability income protection, retirement benefits, sick leave, vacation (paid and non-paid), daycare, funds for education, as well as flexible and alternative work arrangements help to retain a more qualified workforce in the healthcare sector. Regular meetings should be held between staff and management to work out solutions to problems. A culture of work-life balance should be introduced in hospitals, which may include the development of some facilities such as day care, paid leave (paternity, maternity and parental leave, leave for the care of young children, leave for the care of a sick child) etc, especially aimed at maintaining female employee satisfaction. Organisations should also offer ample opportunities for the career development of hospital employees and must provide them greater autonomy and allow them to be a part of the decision-making committees, including compensation and benefits, as it has also been observed that employees face stress mostly when they are not involved in the decisions taken that are closely related to themselves and their work.

Acknowledgement

We take this opportunity to express our gratitude to the members of our Institute, Indian Institute of Management, Lucknow and U.P.T.U. for their support.

Competing interests

The authors declare they have no competing interests.

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Manuscript Preparation and Submission

General Requirements

Language and format

Manuscripts must be typed in English, on one side of the paper, in Arial 11 font, double spaced, with reasonably wide margins using Microsoft Word.

All pages should be numbered consecutively at the centre bottom of the page starting with the Title Page, followed by the Abstract, Abbreviations and Key Words Page, the body of the text, and the References Page(s).

Title page and word count

The title page should contain:

1. **Title**. This should be short (maximum of 15 words) but informative and include information that will facilitate electronic retrieval of the article.
2. **Word count**. A word count of both the abstract and the body of the manuscript should be provided. The latter should include the text only (ie, exclude title page, abstract, tables, figures and illustrations, and references). For information about word limits see *Types of Manuscript: some general guidelines* below.

Information about authorship should not appear on the title page. It should appear in the covering letter.

Abstract, key words and abbreviations page

1. **Abstract** – this may vary in length and format (ie structured or unstructured) according to the type of manuscript being submitted. For example, for a research or review article a structured abstract of not more than 300 words is requested, while for a management analysis a shorter (200 word) abstract is requested. (For further details, see below - Types of Manuscript – some general guidelines.)
2. **Key words** – three to seven key words should be provided that capture the main topics of the article.
3. **Abbreviations** – these should be kept to a minimum and any essential abbreviations should be defined (eg PHO – Primary Health Organisation).

Main manuscript

The structure of the body of the manuscript will vary according to the type of manuscript (eg a research article or note would typically be expected to contain Introduction, Methods, Results and Discussion – IMRAD, while a commentary on current management practice may use a less structured approach). In all instances consideration should be given to assisting the reader to quickly grasp the flow and content of the article.

For further details about the expected structure of the body of the manuscript, see below - Types of Manuscript – some general guidelines.

Major and secondary headings

Major and secondary headings should be left justified in lower case and in bold.

Figures, tables and illustrations

Figures, tables and illustrations should be:

- of high quality;
- meet the 'stand-alone' test;
- inserted in the preferred location;
- numbered consecutively; and
- appropriately titled.

Copyright

For any figures, tables, illustrations that are subject to copyright, a letter of permission from the copyright holder for use of the image needs to be supplied by the author when submitting the manuscript.

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. Participant anonymity must be preserved and any identifying information should not be published. If, for example, an author wishes to publish a photograph, a signed statement from the participant(s) giving his/her/their approval for publication should be provided.

References

References should be typed on a separate page and be accurate and complete.

The Vancouver style of referencing is the style recommended for publication in the APJHM. References should be numbered within the text sequentially using Arabic numbers in square brackets. [1] These numbers should appear after the punctuation and correspond with the number given to a respective reference in your list of references at the end of your article.

Journal titles should be abbreviated according to the abbreviations used by PubMed. These can be found at: http://www.ncbi.nih.gov/entrez/query.fcgi. Once you have accessed this site, click on 'Journals database' and then enter the full journal title to view its abbreviation (eg the abbreviation for the 'Australian Health Review' is 'Aust Health Rev'). Examples of how to list your references are provided below:

Books and Monographs

1. Australia Institute of Health and Welfare (AIHW). Australia's health 2004. Canberra: AIHW; 2004.
2. New B, Le Grand J. Rationing in the NHS. London: King's Fund; 1996.

Chapters published in books

3. Mickan SM, Boyce RA. Organisational change and adaptation in health care. In: Harris MG and Associates. Managing health services: concepts and practice. Sydney: Elsevier; 2006.

Journal articles

4. North N. Reforming New Zealand's health care system. Intl J Public Admin. 1999; 22:525-558.
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References from the World Wide Web

6. Perneger TV, Hudelson PM. Writing a research article: advice to beginners. Int Journal for Quality in Health Care. 2004;191-192. Available: <http://intqhc.oxfordjournals.org/cgi/content/full/16/3/191>(Accessed 1/03/06)

Further information about the Vancouver referencing style can be found at http://www.bma.org.uk/ap.nsf/content/LIBReferenceStyles#Vancouver

Types of Manuscript - some general guidelines

1. Analysis of management practice (eg, case study)

Content

Management practice papers are practitioner oriented with a view to reporting lessons from current management practice.

Abstract

Structured appropriately and include aim, approach, context, main findings, conclusions.
Word count: 200 words.

Main text

Structured appropriately. A suitable structure would include:

- Introduction (statement of problem/issue);
- Approach to analysing problem/issue;
- Management interventions/approaches to address problem/issue;
- Discussion of outcomes including implications for management practice and strengths and weaknesses of the findings; and
- Conclusions.

Word count: general guide - 2,000 words.

References: maximum 25.

2. Research article (empirical and/or theoretical)

Content

An article reporting original quantitative or qualitative research relevant to the advancement of the management of health and aged care services organisations.

Abstract

Structured (Objective, Design, Setting, Main Outcome Measures, Results, Conclusions).

Word count: maximum of 300 words.

Main text

Structured (Introduction, Methods, Results, Discussion and Conclusions).

The discussion section should address the issues listed below:

- Statement of principal findings;
- Strengths and weaknesses of the study in relation to other studies, discussing particularly any differences in findings;
- Meaning of the study (eg implications for health and aged care services managers or policy makers); and
- Unanswered questions and future research.
  Two experienced reviewers of research papers (viz, Doherty and Smith 1999) proposed the above structure for the discussion section of research articles. [2]

Word count: general guide 3,000 words.

References: maximum of 30.

NB: Authors of research articles submitted to the APJHM are advised to consult 'Writing a research article: advice to beginners' by Perneger and Hudelson (2004) and available at: <http://intqhc.oxfordjournals.org/cgi/content/full/16/3/191> This article contains two very useful tables: 1) 'Typical structure of a research paper' and 2) 'Common mistakes seen in manuscripts submitted to this journal'. [3]

3. Research note

Content

Shorter than a research article, a research note may report the outcomes of a pilot study or the first stages of a large complex study or address a theoretical or methodological issue etc. In all instances it is expected to make a substantive contribution to health management knowledge.

Abstract

Structured (Objective, Design, Setting, Main Outcome Measures, Results, Conclusions).

Word count: maximum 200 words.

Main text

Structured (Introduction, Methods, Findings, Discussion and Conclusions).

Word count: general guide 2,000 words.

As with a longer research article the discussion section should address:

- A brief statement of principal findings;
- Strengths and weaknesses of the study in relation to other studies, discussing particularly any differences in findings;
- Meaning of the study (eg implications for health and aged care services managers or policy makers); and
- Unanswered questions and future research.

References: maximum of 25.

NB: Authors of research notes submitted to the APJHM are advised to consult 'Writing a research article: advice to beginners' by Perneger and Hudelson (2004) and available at: <http://intqhc.oxfordjournals.org/cgi/content/full/16/3/191> This article contains two very useful tables: 1) 'Typical structure of a research paper' and 2) 'Common mistakes seen in manuscripts submitted to this journal'. [3]

4. Review article (eg policy review, trends, meta-analysis of management research)

Content

A careful analysis of a management or policy issue of current interest to managers of health and aged care service organisations.

Abstract

Structured appropriately.

Word count: maximum of 300 words.

Main text

Structured appropriately and include information about data sources, inclusion criteria, and data synthesis.

Word count: general guide 3,000 words.

References: maximum of 50

5. Viewpoints, interviews, commentaries

Content

A practitioner oriented viewpoint/commentary about a topical and/or controversial health management issue with a view to encouraging discussion and debate among readers.

Abstract

Structured appropriately.

Word count: maximum of 200 words.

Main text

Structured appropriately.

Word count: general guide 2,000 words.

References: maximum of 20.

6. Book review

Book reviews are organised by the Book Review editors. Please send books for review to: Book Review Editors, APJHM, ACHSM, PO Box 341, NORTH RYDE, NSW 1670. Australia.

Covering Letter and Declarations

The following documents should be submitted separately from your main manuscript:

Covering letter

All submitted manuscripts should have a covering letter with the following information:

- Author/s information, Name(s), Title(s), full contact details and institutional affiliation(s) of each author;
- Reasons for choosing to publish your manuscript in the APJHM;
- Confirmation that the content of the manuscript is original. That is, it has not been published elsewhere or submitted concurrently to another/other journal(s).

Declarations

1. Authorship responsibility statement

Authors are asked to sign an 'Authorship responsibility statement'. This document will be forwarded to the corresponding author by ACHSM on acceptance of the manuscript for publication in the APJHM. This document should be completed and signed by all listed authors and then faxed to: The Editor, APJHM, ACHSM (02 9878 2272).

Criteria for authorship include substantial participation in the conception, design and execution of the work, the contribution of methodological expertise and the analysis and interpretation of the data. All listed authors should approve the final version of the paper, including the order in which multiple authors' names will appear. [4]

2. Acknowledgements

Acknowledgements should be brief (ie not more than 70 words) and include funding sources and individuals who have made a valuable contribution to the project but who do not meet the criteria for authorship as outlined above. The principal author is responsible for obtaining permission to acknowledge individuals.

Acknowledgement should be made if an article has been posted on a Website (eg, author's Website) prior to submission to the Asia Pacific Journal of Health Management.

3. Conflicts of interest

Contributing authors to the APJHM (of all types of manuscripts) are responsible for disclosing any financial or personal relationships that might have biased their work. The corresponding author of an accepted manuscript is requested to sign a 'Conflict of interest disclosure statement'. This document will be forwarded to the corresponding author by ACHSM on acceptance of the manuscript for publication in the APJHM. This document should be completed and signed and then faxed to: The Editor, APJHM, ACHSM (02 9878 2272).

The International Committee of Medical Journal Editors (2006) maintains that the credibility of a journal and its peer review process may be seriously damaged unless 'conflict of interest' is managed well during writing, peer review and editorial decision making. This committee also states:

'A conflict of interest exists when an author (or author's institution), reviewer, or editor has a financial or personal relationships that inappropriately influence (bias) his or her actions (such relationships are also known as dual commitments, competing interests, or competing loyalties). The potential for conflict of interest can exist whether or not an individual believes that the relationship affects his or scientific judgment.

Financial relationships (such as employment, consultancies, stock ownership, honoraria, paid expenses and testimony) are the most easily identifiable conflicts of interest and those most likely to undermine the credibility of the journal, authors, and science itself...' [4]

Criteria for Acceptance of Manuscript

The APJHM invites the submission of research and conceptual manuscripts that are consistent with the mission of the APJHM and that facilitate communication and discussion of topical issues among practicing managers, academics and policy makers.

Of particular interest are research and review papers that are rigorous in design, and provide new data to contribute to the health manager's understanding of an issue or management problem. Practice papers that aim to enhance the conceptual and/or coalface skills of managers will also be preferred.

Only original contributions are accepted (ie the manuscript has not been simultaneously submitted or accepted for publication by another peer reviewed journal – including an E-journal).

Decisions on publishing or otherwise rest with the Editor following the APJHM peer review process. The Editor is supported by an Editorial Advisory Board and an Editorial Committee.

Peer Review Process

All submitted research articles and notes, review articles, viewpoints and analysis of management practice articles go through the standard APJHM peer review process.

The process involves:

1. Manuscript received and read by Editor APJHM;
2. Editor with the assistance of the Editorial Committee assigns at least two reviewers. All submitted articles are blind reviewed (ie the review process is independent). Reviewers are requested by the Editor to provide quick, specific and constructive feedback that identifies strengths and weaknesses of the article;
3. Upon receipt of reports from the reviewers, the Editor provides feedback to the author(s) indicating the reviewers' recommendations as to whether it should be published in the Journal and any suggested changes to improve its quality.

For further information about the peer review process see Guidelines for Reviewers available from the ACHSM website at www.achse.org.au.

Submission Process

All contributions should include a covering letter (see above for details) addressed to the Editor APJHM and be submitted either:

(Preferred approach)

1) Email soft copy (Microsoft word compatible) to journal@achse.org.au

   Or

2) in hard copy with an electronic version (Microsoft Word compatible) enclosed and addressed to: The Editor, ACHSM APJHM, PO Box 341, North Ryde NSW 1670;

All submitted manuscripts are acknowledged by email.

NB

All contributors are requested to comply with the above guidelines. Manuscripts that do not meet the APJHM guidelines for manuscript preparation (eg word limit, structure of abstract and main body of the article) and require extensive editorial work will be returned for modification.

References

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Further information about the Asia Pacific Journal of Health Management can be accessed at: www.achse.org.au.

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About the Australasian College of Health Service Management

ACHSM (formerly Australian College of Health Service Executives) was established in 1945 to represent the interests of health service managers and to develop their expertise and professionalism. Today, the college is the leadership and learning network for health professionals in management across the full range of health and aged care service delivery systems in Australia and New Zealand and the Asia Pacific with some 3,000 members from both public and private sector organisations and non-government and not-for-profit organisations.

ACHSM aims to develop and foster excellence in health service management through the promotion of networking, the publication of research, and through its educational and ongoing professional development activities, including accreditation of tertiary programs in health service management, mentoring and learning sets.

ACHSM has Branches in all Australian States and Territories, New Zealand and Hong Kong. Memoranda of Understanding link ACHSM with other health management bodies in the Asia Pacific. As an international organisation, ACHSM is able to draw upon the experiences of researchers and managers in Australia, New Zealand, Hong Kong and other countries within the region to give readers valuable insights into management issues and approaches in a range of cultures and jurisdictions.

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