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Rural Health Services: data, technology and social capital

The Issue Features:
- **Mapping isolation**
- **eHealth implementation**
- **Open disclosure in Asian**

…….and much more

CONTENTS

IN THIS ISSUE

The exciting news for APJHM is that we have recently been reviewed and evaluated by the Content Selection and Advisory Board (CSAB) of Scopus with a result that our APJHM will be accepted for inclusion in Scopus.

Scopus is said to be the largest abstract and citation database of peer reviewed literature of scientific journals, books and conference proceedings and can be viewed at https://www.elsevier.com/en-au/solutions/scopus.

In advising APJHM of our acceptance we have been advised that the evaluation demonstrated increased citedness of our articles in Scopus based journals. This describes an indicator of the value placed on APJHM by the health management literature. Additional feedback and comments from the Scopus evaluation conclude that the Journal:

> '+ The journal consistently includes articles that are scientifically sound and relevant to an international academic or professional audience in this field.
>
> + The journal has scholarly relevance as evidenced by citations in other journals currently covered by Scopus.
>
> + The abstracts are generally clear and provide an excellent summary of each article's content.
>
> + The abstracts are in keeping with Scopus English Language requirements.
>
> + In general, the content of the articles is consistent with the scope and aims of the journal.
>
> + The articles are consistently of high academic quality, consistent with the journal's stated aims.
>
> + The articles are generally well written and understandable.
>
> + The journal has clear aims and scope/journal policies that are consistent with the journal's content.
>
> + Peer review type is clearly stated and is supported by appropriate reviewer guidelines.'

So very positive news for APJHM and for authors, academics, researchers and doctoral students. So please pass on the 'word' to others. The actual process of inclusion is something that will occur over the next few months. We will keep you informed.

SPECIAL ISSUE

Our colleagues in Hong Kong have again asked for our participation in a special issue based around their annual Conference to be held in Hong Kong in January. The Conference is being organised by the Centre for Ageing and Healthcare Management Research, School of Professional Education and Executive Development, The Hong Kong Polytechnic University. Our colleague Professor Peter P. Yuen is the conference Chair. The Conference is held in January and details of how to submit abstracts and attend etc are at http://healthconf2020.cpce-polyu.edu.hk/.

The theme of the Conference is 'Ageing with Health and Dignity: Implications for Public Policy, Service Delivery, Workforce, Technology and Financing'. If your article or abstract is accepted for the conference, we will consider for publication in the mid-year the special issue of APJHM. **In addition**, we will also consider article for inclusion from authors directly submitting to APJHM, given that in Australia we are in the middle of a Royal Commission into Ageing. There should be plenty of interest from authors given the public exposure of details of the Royal Commission.

The APJHM has had a request for a **second Special Issue** from colleagues in India at the Rajagiri Business School, Kerala, India from the 5th to the 7th February 2020. The theme of this 23rd International Conference on IT Applications and Management is Future of Work in a Hyper-connected World'. Details of the conference are at http://conference.rajagiribusinessschool.edu.in/ITAM23/. If you have an interest in this conference or have a health-

related topic within this theme we would consider a special issue.

ARTICLES IN THIS ISSUE

The Editorial in this issue continues to explore the theme of health reform by traversing some recent experiences of the Editor in rural health contexts that traverse big data, technology, the social capital of health professionals all currently operating in drought and fire ravaged circumstances. After we pass the current circumstances there will be a need to rebuild rural communities and sustainable health services and workforce should be part of the community building.

Our first article in this Issue is by Abed Aktam Anjrini, Kruger and Tennant and addresses the topic of mapping isolation of risk for sporadic conditions, in this specific case, oral cellulitis in Western Australia. The authors utilised geographic information systems to predict risk in a risk isolation model that that used real Western Australia data which allowed the authors to visualise the data from Perth, the greater metropolitan area and the State of Western Australia, and to demonstrate risk categorisation and relationships.

The next article by Rakesh Kumar Sharmar and Rohtash examines the 'feasibility of eHealth implementation in India by learning from the global experience'. The article is an exploratory study that examines implementation at four different levels of practitioner, patients, organisational and government. The authors describe their findings at each level and suggests that the findings might help decision makers at different levels in India to successfully integrate information technology with healthcare.

Esswood and Olley provide our next article that explores the implementation of open disclosure in the Asian context of Singapore. This article traverses the experience of other nations in this area with a focus towards how Singapore might implement policy of open disclosure with the emphasis on the concept of 'apology' within an Asian context.

Our next article is by Muhammad Arif, Cruikshank and Fraser and is entitled 'to remain, migrate abroad or resettle: A complex dynamic processing affecting Pakistani physicians career decisions. This is an important article given the inter dependence of many countries in the Australian and the Asia Pacific on a reliance on overseas trained health professional and, the impact on home countries.

In accordance with our new policy of publish when ready we nay have more articles to add to this issue in the new year. On Behalf of myself and Yaping Liu the APJHM wishes you a pleasant festive season and new year.

DS Briggs
Editor-in-chief

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EDITORIAL

RURAL HEALTH SERVICES: DATA, TECHNOLOGY AND THE SOCIAL CAPITAL OF LOCAL HEALTH PROFESSIONALS, TIME TO INVEST!

David S Briggs

Recent editorials have had some focus on health policy and health reform and included commentary about the variability of output from public policy research institutes, based on their respective philosophical and ideological position. Recently, a group Global Access Partners (GAP) published a report entitled 'Australia's Health 2040: GAP Taskforce Report'. [1] This organisation is said to be an independent non-profit institute, established in 1997 and is a member of the TCG Group, described as a diverse and growing network of Australian-owned companies. [1,2]

The Task Force Report suggests seven reforms to provide consumers with the right type of care. These reforms include; increased emphasis on prevention and chronic disease management, funding equitable access to a patient-centred delivery model, implementation of all independent MBS reviews creating an ongoing process to identify low value care opportunities. The detail of these reforms is included in the Report. [1, p.4] The suggested reforms also include investment in the utilisation of technology in primary care, providing effective care for dentistry and supporting the utilisation of mental health services, including digital services. [1, p.5] The Report also suggests that 'paying the right price for care' requires a private-public partnership structure and that the price paid be benchmarked to the value demonstrated. [1, p. 6]

In operating transparently and efficiently the Report argues for a National Centre for Healthcare Innovation and Improvement. In part they suggest this might help build capacity in the commissioning work of Primary Health Networks. There are, of course, further recommendations and the Report is commended to you and you are encouraged to read further. The Report emphasises that the reforms are 'proposed through a pragmatic lens' based on 'context, experience and international best practice'. [1, p.9] The Report also identifies the inequity of access for rural and remote communities to access care and general practice based primary healthcare. [1, p.11] This, in the authors view are very pertinent current sensitivities given the extensive drought in rural areas and the extensive bush fire grounds many of us are experiencing in Australia.

It suggests to the Editor that any drought/fire strategies and funding adopted to help address the impact of drought and fire on communities should include an additional major investment in both structure and social capital in primary health care in what are basically 'underserved' rural contexts. The lack of equity for rural communities in accessing and utilising healthcare is more than self-evident. Poor socio-economic determinants and significant gaps in general practitioners and allied health staff go to a lack of social capital in rural communities. Restoring the health of rural communities should be a drought priority response. The Report emphasises that 'healthcare is a major employer and driver of economic activity in Australia'. [1, p.14]

The Task Force Report goes on to suggest trends that will influence future health service development. One of these is the growing role of technology and data. Unfortunately, in Australia, this growth has been limited by poor communication infrastructure and strictures on payment methods for general practice consultations using technology. The impact in primary care is limited although telemedicine is more accessible in the emergency departments of acute care hospitals, giving patients and staff instant access to emergency physicians and other specialists. This access has not been extended to the rural primary healthcare sector in any substantial way.

This contrasts with the recent experience of this Editor in presenting at and attending a health conference in Shanghai, China. The integrated traditional and western medicine private hospitals who hosted the conference were focused on technology, they already have and are using 5G, they have Robots that can diagnose and treat and they are looking at their 'big data' to evaluate and improve the quality of health outcomes. The conference had a panel session of senior doctors reflecting and debating what the future of their profession might be given the implementation of technology and robotics. The statement was made at this conference that the patient and doctor no longer need to be in the same room at the same time for diagnosis and treatment to occur! [3]

In the USA, one example of attempts to address the void in rural and remote America is described as a 'telemedicine centre' where physicians for one provider are said to work out of 'high tech cubicles' not traditional treatment rooms, to provide remote emergency care for 179 hospitals across 30 states! This 'virtual ER' is located in a suburban industrial park and responds remotely to more than 15,000 emergencies each year, using remote – controlled cameras and computer screens. This article goes on to suggest that if anything defines the growing health gap between rural and urban America, it is the rise of emergency telemedicine in the poorest, sickest and most remote parts of the country, where the choice is increasingly to have a doctor on screen or no doctor at all'. [4]

These are just two examples of innovation in rural healthcare, albeit in different political and public policy contexts to that of Australia. However, it does raise the question as to the effectiveness of the organisation of health services that still reside in a public policy and political context that has not really changed since 1901. Do we really need all of those State health bureaucracies as well as those maintained by the Commonwealth? Other examples of more ordered national health systems in the Asia Pacific would suggest not.

However, returning to the present, not the future, the Commonwealth and State governments will turn attention to rebuilding rural communities following the drought and bushfires. Rural communities are resilient, but they have lost a lot of social capital. In our case I'm defining that as general practitioners, nurses and the range of allied health professionals. A greater investment in attracting these resources to rural communities or groups of communities with appropriate technologies giving them access to specialist services directly would be a wise investment. The existing approaches have not worked nor is the oft used practices of noting the poorer health outcomes of rural dwellers, shaking our heads but substantially not making any effective progress within existing structures, to address them.

Let us hear of innovative approaches and partnerships and use the opportunity of rebuilding rural communities, post the drought and fires, to also include a greater investment in their health services.

DS Briggs
Editor in Chief
NB: The Editor is a member of a PHN Board

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RESEARCH ARTICLE

MAPPING ISOLATION OF RISK FOR SPORADIC CONDITIONS: ORAL CELLULITIS IN WESTERN AUSTRALIA

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ABSTRACT

The aim of this study was to apply geographic information system (GIS) models to predict risk of oral cellulitis. A risk isolation model using Western Australian real hospitalisation data for oral cellulitis from 1999 to 2009 (10 years), and socio-economic indicators, age and Indigenous status as risk indicators was developed. The fully integrated database was then computer geo-coded to allow the visualization of the data at three levels (core of the capital city Perth, Greater Metropolitan Perth, and State of Western Australia). Correlation coefficient analysis between the number of cases (over 10 years) and the relative risk location indicator was carried out. The GIS maps derived from application of the developed risk location indicator, demonstrate that the risk categorization paralleled the number of cases over the decade. Correlation coefficient analysis demonstrated moderate positive relationship (R2=0.55) between the number of cases (over 10 years) and the risk location indicator in metropolitan Perth.

KEYWORDS

Risk isolation; Sporadic condition; GIS; Poverty-related infections

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INTRODUCTION

Managing populations and health care are a complex interaction between prevalence incidence and access. There are conditions that although rare make significant imposts on health system in resource terms. For example, cellulitis of the mouth and submandibular region (oral cellulitis) is a rare, potentially fatal soft tissue infection of dental origin, mostly arising as a complication of a dental abscess. Its most severe presentation (Ludwig's Angina) could possibly lead to oedema, distortion, and obstruction of the airway. [1] Oral cellulitis can be used as an indicator of significant dental disease in a society [2], as it often reflects the end of spectrum of oral disease that starts with dental caries and ends with spread of infection to tissues surrounding the oral cavity.

Globally, a strong correlation between dental infections and poverty has been reported [3,4], with an Australian study showing hospitalisations for oral cellulitis being significantly more common in the lower socioeconomic groups of the society who could not afford private health insurance. [2] Furthermore, Aboriginal and Torres Strait Islander people were significantly more affected (7 times over represented) compared with non-Indigenous Australians. [2]

Sporadic medical conditions can be problematic for risk assessment, as they occur in small numbers, which poses a statistical challenge, and they tend to follow non-predictable patterns.

The science of geographic information system (GIS) is developing at a global level and has many applications to

assist in health management decision making and resource targeting. This discipline can act as a decision-making tool in public health and contribute to the formulation of policies. Worldwide innovative ways are being developed to harness the data integration and spatial visualization power of GIS. [5]

GIS has been successfully used previously, to geographically isolate the risk areas for sporadic disease occurrence. [6] One of the steps towards management of oral cellulitis in poor communities and within Indigenous populations is to determine the location of the clusters at highest risk within the population. This targeting can help health services prepare planning for cases as well more systematic approach to prevention. In the case of Cellulitis, the prevention is focused on timely and appropriate care in the primary care sector.

In this study, the aim was to apply GIS models, (based on a risk location indicator developed from existing case data), to determine regions of Western Australia that are predicted to have a high number of oral cellulitis cases. This type of predictive model can assist in focusing primary health resources to areas of risk and thereby reduce the substantial costs, and risks, associated with treating this condition.

METHOD

Western Australia is Australia's largest State, geographically, with about 2.6 million inhabitants; about 75% of this population live in the capital, Perth.

The data used for the purposes of this study were collected from the Western Australian Hospital Morbidity Data System (HDMS)[7] under appropriate ethical approval (Ethics Committee of The University of Western Australia, approval number RA/4/1/5502) and covers a 10-year period, beginning from July 1999 to June 2009 (financial years). It was generated from recording every episode of discharge for cases of cellulitis of the mouth and submandibular region as the principal oral condition (K12.2), as classified by the International Classification of Diseases–tenth Australian Modification (ICD-10AM).[8] These data were collected from all public and private hospitals in the State of Western Australia. Other variables included in the data-set were patient's age, main place of residence at time of hospitalisation, and Indigenous status. An Indigenous person is a person of Aboriginal or Torres Strait Islander descent (the first peoples of Australia) who identifies as such.

In conjunction with the data collected from the HDMS, the data from the Australian Bureau of Statistics (ABS) 2006 Census were within the time range of our study and were incorporated into our analysis.[9] The rate calculations for Western Australian Hospitalisation were then calculated using population data obtained from the census. Age, Indigenous status and Socio-Economic Indexes for Areas (SEIFA) category were included as risk indicators. SEIFA, Australian national index system for economic disadvantage [10] is a national quintile index based on deciles of the total Australian population. In SEIFA, the lowest scoring 10% of areas are given a decile number of 1, the second-lowest 10% of areas are given a decile number of 2, up to the highest 10% of areas which are given a decile number of 10. [9] The 10 deciles were combined into 5 groups: 1- most disadvantaged; 2- above average disadvantaged; 3-average disadvantaged; 4-below average disadvantaged; and, 5-least disadvantaged. As the cellulitis cases per 100,000 people (Table 1) were 38 times over - represented in group 1 and about 5 times over represented in group 2, compared to the other 3 groups [2], only groups 1 and 2 were included in the risk assessment study.

The age variable was divided into six sub-sets: 0-4,5-14,15-19, 20-34, 35-49 and 50-69 years. The study did not include subjects over 69-year-old as the numbers were very low. The Indigenous status variable has two sub-sets: Indigenous and Non-Indigenous. In Western Australia, there are 155 geographic areas, which do not overlap, known as statistical local areas (SLAs). A total of 24 distinct rates (cases per 100,000 people) of cellulitis were computed dependent on the mix of the variables sub-sets (Table 2).

TABLE 1: ANNUAL RATES PER 100,000 CAPITA AND NUMBER OF ADMISSIONS FOR ORAL CELLULITIS IN WESTERN AUSTRALIA FOR THE PERIOD 1999-2009 FOR SEIFA GROUPS (FROM GROUP 1 MOST DISADVANTAGED TO GROUP 5 LEAST DISADVANTAGED).

SEIFA	ANNUAL RATES †	POPULATION	ADMISSIONS/10 YEARS
GROUP 1	77.1	33719	260
GROUP 2	9.6	149531	144
GROUP 3	1.8	747283	135
GROUP 4	2	524578	106
GROUP 5	2	497652	103

TABLE 2: ANNUAL ADMISSION RATES PER 100,000 POPULATION FOR ORAL CELLULITIS BY INDIGENOUS STATUS, AGE AND DISADVANTAGE.

AGE GROUPS	INDIGENOUS POPULATION		NON-INDIGENOUS POPULATION	
	SEIFA1	SEIFA2	SEIFA1	SEIFA2
0-4	79.8	0	113	8.5
5-14	34.4	3.9	15.5	2.1
15-19	94.2	44.5	82	12.3
20-34	164.1	47.7	179	17.5
35-49	103.7	36.5	76.8	13.1
50-69	44.3	19.4	43.7	6.2

IBM SPSS Statistics V21.0 was used to produce the required population-based rates. Population data across each of the 155 SLAs from the Australian Bureau of Statistics (ABS) 2011 Census [9] were distributed by age, Indigenous status and SEIFA. Using Excel v2003 (Microsoft; Redmond, WA, USA), the hospitalisation rate for each population subset derived from the Western Australian morbidity data was applied to the appropriate population subset (age, health Indigenous status, SEIFA) within each SLA.

The integrated database was then geo-coded using QGIS (version 2.14) (www.qgis.org) to allow the visualization of

the fully integrated data model. SLA geographic locations were obtained from 2006 ABS census. Both real cases of cellulitis occurring between 1999 and 2009 and Western Australian areas were mapped and demonstrated at three levels (core of the capital city Perth, Greater Metropolitan Perth and State of Western Australia). The levels are according to a nationally agreed accessibility and remoteness index: the core is inner urban, greater metro is outer urban, and rest of state is regional/rural. [11]

The risk location indicator (RLI) developed, rested on three fundamental known risk factors, determined from a previous study [2] being poverty, Indigenous status and age. The specific variable values used to determine the risk indicator for each area, were obtained from census data and enabled the calculation of oral cellulitis risk for each SLA. The calculated risk indicator values have no upper boundary, and higher numbers represent higher risk of oral cellulitis.

Using SPSS, Pearson's correlation coefficient was calculated to determine the levels of correlation between the number of cases (over 10 years) and the risk location indicator (RLI) for metropolitan Perth (36 SLA's), as well as for the rest of the State.

RESULTS

Over the 10 years of data available for this study there were 762 cases of oral cellulitis. On average this was approximately 76.2 cases per year in a population of approximately 1.96 million people (Census 2006)

FIGURE 1: TOP LEFT: CENTRAL PERTH-GEOGRAPHIC DISTRIBUTION OF THE ABSOLUTE NUMBER OF CASES (CIRCLES) AND THE AREA RELATIVE RISK FOR ORAL CELLULITIS. (INDICATED BY BACKGROUND COLOR) (CROSS HATCHED STATISTICAL LOCAL AREAS ARE THE CITY OF PERTH). TOP RIGHT: METROPOLITAN PERTH: BOTTOM LEFT: STATE OF WESTERN AUSTRALIA

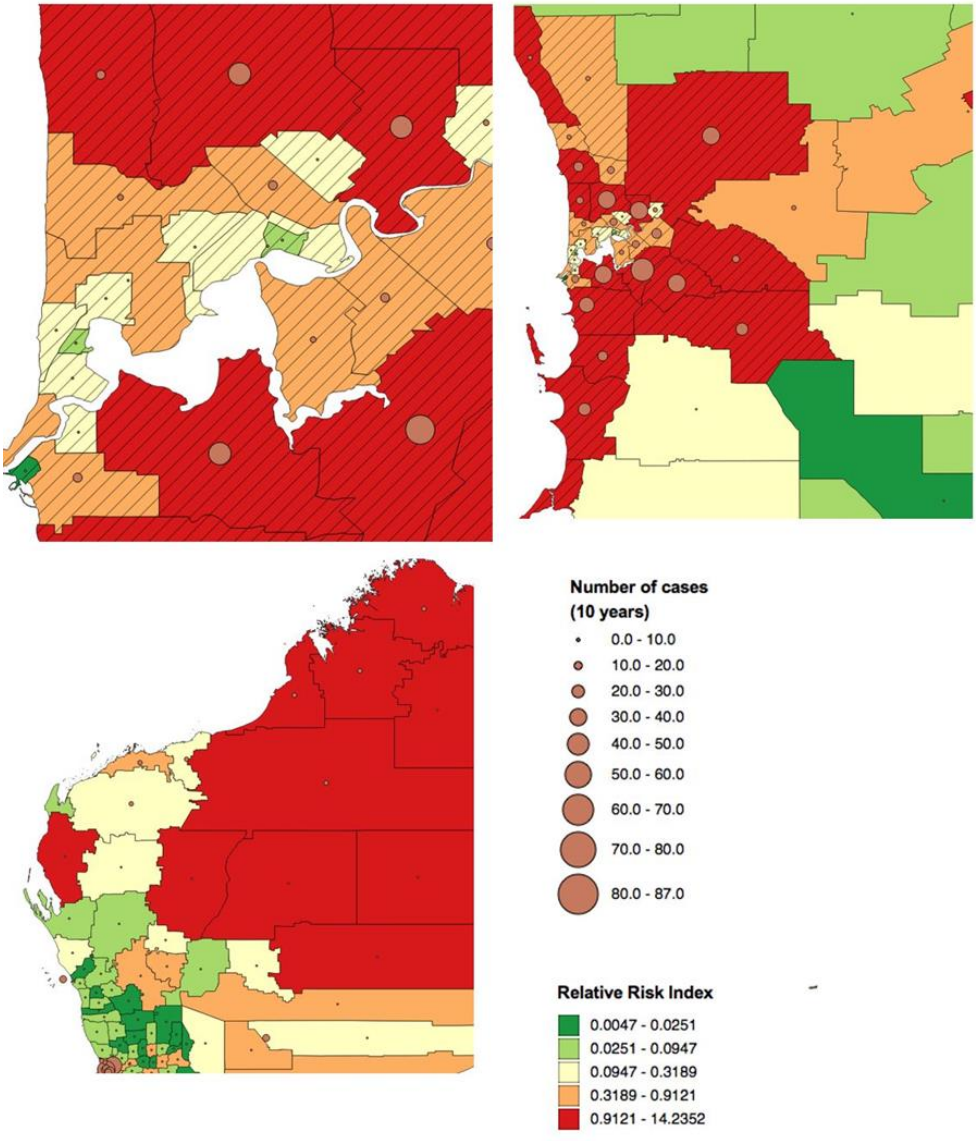
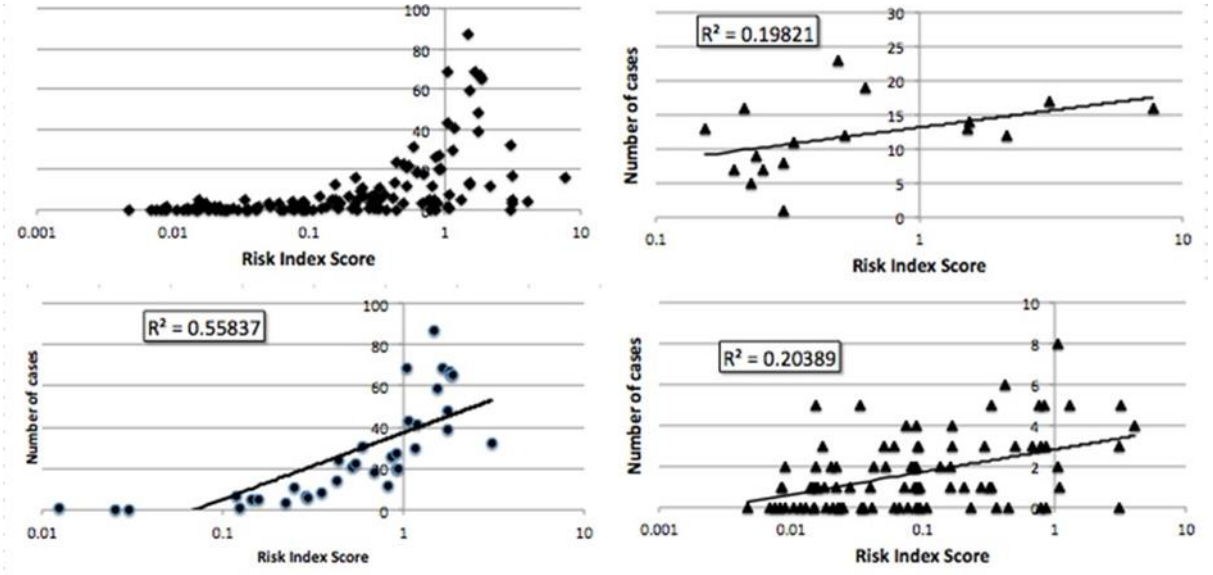


FIGURE 2: CORRELATION COEFFICIENT ANALYSIS BETWEEN THE NUMBER OF CASES (OVER 10 YEARS – VERTICAL AXIS) AND THE RISK INDEX (LOGARITHMIC SCALE – HORIZONTAL). FOR ALL OF WESTERN AUSTRALIA (TOP LEFT), MAJOR CAPITAL CITY ONLY (BOTTOM LEFT), RURAL AREAS WITH SLA POPULATION ABOVE 10,000 (TOP RIGHT) AND RURAL AREAS WITH POPULATION BELOW 10,000 (BOTTOM RIGHT).



Correlation coefficient analysis was applied to city and country data separately (Figure 2). The correlation between total cases over the decade in the city was moderately positive (R2=0.55) whereas (not unexpectedly) the correlation for the rest of the State was lower (R2=0.27). Further analysis of the non-city-based data, by dividing it into larger (greater than 10,000) and smaller SLA's did not change the lower level of correlation in the non-metropolitan areas (Figure 2)

DISCUSSION

This research used data from both the Australian Bureau of Statistics (ABS) census and the Australian Classification of Disease coding system (ICD10) to develop high resolution maps for oral cellulitis risk. In each map, it is clear that a higher number of (real) cases were found in areas where the risk model proposed would be a high risk of oral cellulitis. The correlation was higher at the city level (Figure 2) than in rural/regional areas. This may indicate that there is more heterogeneity amongst the major city areas in Western Australia as compared to in the rural areas only. Those results show that this risk location indicator (RLI) for a sporadic condition could be a reliable measure of risk for oral cellulitis in cities, but less effective in the lower, more widely dispersed population mix of rural and remote regions.

The obtained maps, on multiple levels, could identify areas where oral health services might be needed, or delivered differently, across Western Australia. Oral cellulitis could be considered a measure of the extreme level of dental disease [2], and its analysis could be used to study the overall dental service uptake.

Non-normally distributed oral cellulitis is an example of how traditional single parameters, such as average and incidence, could not be properly applied to the over-all population. [12] When examining the over-all incidence of this condition in Western Australia over the last 10 years, as previously reported [2], the annual rates per million ranged between 25 and 60 cases, which was higher than UK rates for the same period. However, at the level of sub-groups, the picture looks more alarming, with poverty and Indigenous status strongly affecting the number and rates of this condition [2]. The most disadvantaged group shows an annual rate of 771 cases per million (77.1 per 100,000), which is over 30 times the rate of some of the richer (less disadvantaged) groups [2].

The major limitation of the study is the pooling of cases over 10-year period, which is due to the low number of cases of oral cellulitis. This is related to the rarity of this sporadic condition.

The majority of oral cellulitis cases arise from dental origin, mostly dental caries. Other dental conditions leading to cellulitis include periodontal disease, dental anomalies and dental trauma. [13-15] There are many factors that could contribute to caries leading to oral cellulitis, however, lack of water fluoridation and dental service availability might play a role. [16-19] Most of the Australian population have access to water with regulated levels of fluoride. [16] However, only 12.5% of Indigenous communities in Western Australia have access to water with tested fluoride levels of greater than 0.5 ppm [16], which may contribute to the higher levels of caries in these communities, and which may subsequently lead to higher rates of oral cellulitis. Dental practice to population ratio is significantly higher in wealthy populated areas in Western Australia [17-19], which makes it more difficult for people living in more disadvantaged (poorer) areas to access regular preventive dental care. The developed risk indicator will help health management in planning water fluoridation areas and determining the locations of need for public dental clinics.

CONCLUSIONS

In conclusion, the developed geographic risk index using existing data to predict disease risk on a regional basis can be used effectively as a health management planning tool for geographic isolation of risk related to oral cellulitis.

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RESEARCH ARTICLE

FEASIBILITY OF EHEALTH IMPLEMENTATION IN INDIA LEARNING FROM GLOBAL EXPERIENCE

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ABSTRACT

The present paper explores the factors for the effective implementation of eHealth in India by taking into account the diverse benefits and challenges at organization and practitioner's level. The present study is exploratory in nature which has been carried out after comparing the study across the globe. Various benefits and challenges explored from previous studies are used to discover the factors for effective implementation of ehealth in India. Findings of study centered to identify factors for effective implementation of eHealth at four different levels: Practitioners' level, Organizational Level, Patients' Level, and Government level. The most important factors at practitioners level are an alignment of the practitioners with objectives and making adequate arrangements for training of the practitioners. The important factors required to overcome problems at practitioners level are perceived usefulness, perceived ease of use and attitude to use eHealth. At the organization level, important factors are an alignment of stakeholders with current goals, skills set of staff, the relationship among healthcare professionals, capacity for implementation, training and development and employees motivations. At this level, important factors to deal with these challenges are customer value, to build trust in the healthcare provider, interoperability among different healthcare providers, characteristics and mindset of healthcare providers. At the government level, the imperative factors as required to handle different challenges are government policies, sources of funds, reliable health infrastructure and engagement of various stakeholders. Other important factors at this level are the status of eHealth readiness in different areas and levels, social influences and human development index.

Thispaper highlights the eHealth experiences across the globe and identifies various benefits and challenges in the implementation of eHealth, which will help the decision makers at a different level in India to successfully integrate information technology with healthcare.

KEYWORDS

eHealth, HIS- Hospital Information System, UHC- Concept of eHealth Centre

INTRODUCTION

The present study provides the theoretical overview for the effective implementation of eHealth in the Indian health care sector. This study explores the various prospects and challenges associated with the effective implementation of eHealth. In India, there is no study undertaken to explore the important aspects of eHealth. But in the developed countries like the USA and European countries have already implemented eHealth in their economies. Effective implementation of eHealth may provide tremendous benefit to Indian people. This study has taken into consideration the various valuable inputs from the global studies related to eHealth and provide an effective framework for effective implementation of eHealth in the Indian economy.

EHEALTH

eHealth refers to health services and information delivered or enhanced through the internet and related technologies. eHealth leads to efficiency in healthcare and enhance the quality of care. [1]

Developing countries like India have lagged in the implementation of eHealth because healthcare has remained for a long time as the domain of public sector; there is lack of funds, less penetration of social security and insurance in the healthcare sector. Companies like Wipro, Tata Consultancy Services (TCS), Hewlett-Packard (HP) and Intel etc. are engaged with various state governments in India to implement various forms of eHealth.[2]

Major themes of eHealth care research are cost savings; virtual networking; electronic medical records; credibility of the source, privacy concerns, and physician-patient relationships. [3]

EHEALTH SCENARIO IN INDIA

The Hospital Information system, hereafter HIS, was deployed to manage the data of the patients. In India, a gap which exists due to a shortfall of human resources, infrastructure, and updated skill level of practitioners can be bridged by the integration of eHealth in healthcare and health educational system. [4] Satisfaction of Patients is of utmost importance for the success of any healthcare services. Patients being at the centre stage will ultimately decide the acceptance and absorption of this technology. [5]

In India, the doctors see telemedicine as a potential tool in future healthcare delivery in the country but at the same time, they were not aware of the benefits of electronic medical records. Doctors were willing to learn more about the role of computers and the internet in improving healthcare. [6] Successful implementation of e-governance in the healthcare sector requires the breaking of the digital divide at the level of government, business, and people. [7]

India is starting to make strides in the fields of telemedicine and eHealth. Most telemedicine activities are sponsored by central organizations like Indian Space Research Organization (ISRO) and the Department of Information Technology and are in project mode. [8] But in the last decade, due to the revolution in telecom industry especially in the mobile technology, the use of mobile phones in delivering healthcare services has emerged as a significant opportunity and has opened a plethora of avenues to extend healthcare services in far off places. [9] The government also plans to implement a Citizen Health Information System (CHIS) - a biometric-based health information system, to keep updated health records of every citizen covered under this system.[10]

Countries like India require breaking the digital divide among various dimensions like at the level of Government to business, Government to citizen and Government to Agent. [11] eHealth is being adopted steadily in the healthcare system of the country. This requires individuals trained in technical and managerial skills. India needs to not only create literacy for the information and communication technology but also needs to aware the masses about the system. [12]

The concept of eHealth Centre (UHC), which involves creating health centres from cargo containers by deploying healthcare equipment along with information technology facility, is being experimented in rural India. The concept is a potential approach to augment healthcare delivery, especially in a rural setup. [13] Developing countries just like India are undergoing a rapid technological transformation in part due to the increased availability of mobile devices and network connectivity. This is accelerating the adoption of eHealth. [14]

Ministry of Communication and Information Technology has taken an initiative for developing information technology infrastructure for health to improve administrative processes, sharing of information and enhanced access to healthcare in a cost-effective manner. [15]

OBJECTIVES OF THE STUDY

The present study has been undertaken to explore the benefits and challenges involved in the effective implementation of eHealth in India. The following are the main objective of the present study.

O1: To identify the various factors required for the effective implementation of eHealth in India.
O2: To make recommendations for the effective implementation of eHealth in India.

LITERATURE REVIEW

Review of the existing literature has an immense significance in the research of any project as it acts as a backbone for new studies. In the present study, the review of the literature has been divided into the following two parts. Challenges faced at the global level for implementing eHealth and Important factors for implementing eHealth

CHALLENGES FACED AT THE GLOBAL LEVEL FOR IMPLEMENTING EHEALTH

In Africa, high illiteracy, low tertiary institution enrolment rates, shortage of appropriate ICT know-how, infrastructural issues, low per capita income, and limited internet connectivity were the major challenges.[16] Despite initial successes, the diffusion of eHealth has been quite difficult.[17] The websites of the hospitals, which offer patient-oriented interactive eHealth tools, have not been able to meet the needs of the patients. [18]

eHealth should help to maintain the inter-personal relationships created due to doctor-patient communication. Professionals from different fields need to be engaged and work in tandem with the proper integration of eHealth in the current system and it requires proper change management initiatives.[19] Rural eHealth implementation is an emerging field, but the adoption of eHealth has not been successful because many factors affecting the implementation are underestimated. [20] eHealth standards, information and communication technology and health policies, e-legislation, eHealth infrastructure, and ICT capacity pose another challenge.[21]

Lack of commitment at the level of implementers, lack of proper training to the medical staff and poorly managed hospital information system creates impediments.[22] EHealth care is a challenge that all countries face today, irrespective of their development status. [23] Lack of ICT infrastructure, electric power supply, and basic ICT knowledge or skills has been some of the challenges facing eHealth implementation in developing countries. [24]

Latest technologies like cloud-computing have started to contribute in a big way in the healthcare system in India. Though this technology is quite economical and sustainable, yet data security is an area of concern in this regard. [25] Another major challenge in eHealth is of providing finance to such activities and making the initiatives financially sustainable. So, eHealth is more likely to succeed in the Indian scenario when government and private sector collaborate in this regard. [26]

IMPORTANT FACTORS FOR IMPLEMENTING EHEALTH

The European experience highlights that strong eHealth policy by the political leadership, engagement of various stakeholders, reliable healthcare infrastructure, regional focus rather than national focus, training to the concerned professionals and the evaluation of impact are the factors responsible for the successful implementation of eHealth. [27]

Cost-effectiveness of eHealth solutions is an important aspect and there is a need to evaluate the return on investment in this regard. [28] The areas affected during the implementation of eHealth are the alignment of eHealth initiatives with current organizational goals and the skill sets of the staff, the impact of eHealth on the patient-professional interaction and the relation among the professionals. [29] Acceptance and adoption of eHealth services depend upon the extent to which the people are aware of them and the benefits they offer. [30]

Mobile health, hereafter m-Health, refers to the use of mobile technology in healthcare, has seen an explosion of related activities around the world. The most common activity was the creation of health call centers, which respond to the patient inquiries, followed by using SMS for appointment reminders, telemedicine, accessing patient records, measuring treatment compliance, raising health awareness, monitoring patients and for the decision support to the physicians. [31]

The factors are responsible for the behavior of the physicians towards the use of technology in healthcare practices are perceived ease of use, perceived usefulness, attitude and behavioral intention to use the system. Moreover, a person's innovativeness also affects his/her readiness to accept the new technology. [32] Structural, professional and geographic boundaries can also impact the implementation of eHealth. [33]

Critical factors, which drive the eHealth infrastructure and its use in a nation, are healthcare costs, perception about health and confidence in healthcare systems, health infrastructure, and human development index. [34]

The extent of technology adoption in healthcare depends upon the degree to which the new technology enables the physician-patient interaction, the technology, how it fits into existing skill sets of various professionals involved and the extent to which integrates itself among the existing relationships between various healthcare professionals it is in accordance to the organizational objectives and capacity to implement eHealth. [35]

Adoption of eHealth by the healthcare providers depends upon the characteristics of a healthcare provider,

characteristics of medical practice, perceived usefulness of eHealth, expected effort in usage, willingness to use, perceived usefulness, efforts expected to use, social influences, factors facilitating or inhibiting to use eHealth.[36]

Implementation of eHealth requires the study of national and local policies, organizational factors, impact on physician-patient and interprofessional interactions. Distribution of work among different user groups, the need for training must be studied before implementation. [37]

RATIONALE FOR THE STUDY

New technological intervention in any sector requires state intervention, which creates a conducive environment and necessary infrastructure for the diffusion of technology. The government of India and many state governments in their initiatives towards e-governance have started stressing on the role and integration of IT in healthcare. There is a big socio-economic difference that prevails between India and the developed economies which have successfully started to integrate technology within their healthcare sector. The study will help to identify the prospects of eHealth in the Indian context and to underline various problems being faced by health care professionals and the organizations in the deployment of the technology in the Indian healthcare sector.

ANALYSIS AND INTERPRETATION

Based on various studies pertaining to the Global and Indian context of eHealth research, various aspects of eHealth-their benefits, challenges for them and factors for the implementation of eHealth at different levels can be highlighted. These aspects can be considered at four levels of Healthcare services: Practitioners' level, Organizational Level, Patients' Level, and Government level.

FACTORS FOR EFFECTIVE IMPLEMENTATION OF EHEALTH IN INDIA-AT PRACTITIONERS' LEVE

TABLE 1: FACTORS FOR EFFECTIVE IMPLEMENTATION OF EHEALTH IN INDIA-AT PRACTITIONERS' LEVEL

ASPECTS	BENEFITS	CHALLENGES	FACTORS
SKILL	Skill Development. [44, 72 -73] Distance Medical Education. [74-77].	Lack of ICT Training Lack of commitment for eHealth. [21,45]	Alignment with objectives Innovativeness in training of practitioners.[31, 29, 39 -40]
DISTANT TREATMENT	Remote physical examination Transfer of instant diagnosis.[39]	Patients take a passive role in interaction with Doctors. Less awareness among doctors. Physician-patient relationship.[40-42]	Perceived usefulness Perceived ease of use Attitude to use eHealth. [30, 43- 45,59]
VIRTUAL DIAGNOSIS	Real-Time Data Monitoring Less chances of data omission. [46-47,70]	Lesser Empathy. [55]	Characteristics of Medical Practice. [36-37]

Source: Authors Compilation

Skill development [44,72-73] and distance medical education can be considered as major benefits (table 1) derived from eHealth [74-77], which are followed by certain challenges like lack of Information and technology training and commitment for implementation of eHealth. [2,45] The most important factors required in this case will be an alignment of the practitioners with objectives and making adequate arrangements for training of the practitioners. [31, 29,39-39] A study conducted by.Ray and Mukherjee [38] on eHealth in India today, the nature of work, the

challenges and the finances also discovered that training the manpower that will work in non urban centres is important to the success of such a programme.

Remote physical examinations and immediately diagnose are other advantages of eHealth implementation (table 1).[39] But there are certain problems or challenges e.g., the patient may take a passive role in interaction with doctors, less awareness among doctors and well-established physician and patient relationship when they interact face to face.[40-42] The important factors required to overcome from these problems are perceived usefulness, perceived ease of use and attitude to use eHealth. [30,43-45,59]

Real-time data monitoring and fewer chances of information omission are the other beneficial aspects followed by the challenge of lesser empathy (table 1). [46-47, 55,70] An important factor to overcome with this challenge is the characteristic of medical practice. [36-37] It would enhance efficiency, reduce redundancy, alleviate the documentation burden, and improve integrity. It helps in the development of guidelines for both vendors and users of EHR systems regarding the appropriate use of documentation techniques to ensure complete, accurate, and quality documentation (table 1). [46]

FACTORS FOR EFFECTIVE IMPLEMENTATION OF EHEALTH IN INDIA-AT ORGANIZATION LEVEL

TABLE 2: FACTORS FOR EFFECTIVE IMPLEMENTATION OF EHEALTH IN INDIA-AT ORGANIZATION LEVEL

ASPECTS	BENEFITS	CHALLENGES	FACTORS
ADMINISTRATIVE	Patient record-keeping Hospital Functioning Patient Management Employee productivity Standardisation. [54,68-70]	Change Management The shortfall of skilled human resource. [23, 48-50] PoorlyManaged hospitalinformation system. [51] Resistance to adapt to the new system. [52] Organizational Climate. [55-58]	Alignment of stakeholders with current goals. The skill set of staff. [27] The relationship among healthcare professionals. [29, 40 and 37] Organizational Objectives Capacity for implementation Training and development Employee motivation. [27,35]
HEALTHCARE SERVICES	Enhanced Reach Improved diagnosis and treatment Better patient care Improved safety Controlled Investigations Services Integration. [53-54]	Multiple Health Issues Different specialists involved Different locations Proper authentication to access the system Hospital websites not effective. [18]	Customer value Trust in healthcare provider. [30] Interoperability among different providers. [38] Characteristics and mindset of healthcare provider
FINANCIAL ASPECTS	Reformation of financial transactions. [59] Reduced cost of treatment. [78-79]	Low tertiary care enrolment rates Return on Investment. [27-28]	Source of Funds. [66] Monetary value Cost-effectiveness of solutions. [27-28,71]

Source: Authors Compilation

There is several administrative advantages that can be seen from the eHealth implementation viz., patient record keeping, hospital functioning, patient management, employee's productivity, and standardization (table 2). [54,68-70] But major challenges to avail these benefits are the changes required in the system. These challenges are

shortage of skilled human resources [23,47-49], poorly managed hospital information system[51], resistance to adapt to the new system and organizational climate (table 2).[52, 55-58] There are a number of factors which can be supportive for managing these challenges. These factors are an alignment of stakeholders with current goals, skills set of staff, the relationship among healthcare professionals, capacity for implementation, training and development and employees motivations (table 2). [27,29,35,37,40]

There are plenty of benefits of eHealth in improving healthcare services such as enhanced reach, improved diagnostics and treatment, better patient care, improved safety, controlled investigation, and services integration etc (table 2).[53-54] Similarly, these prospective gains may face certain challenges such as patient-facing multiple health issues, a different specialist involved in treatment, patients and healthcare services providers at different locations, need of proper authentication to access the system and hospital websites are not effective. [18] Important factors to deal with these challenges are customer value, to build trust [30] in the healthcare provider, interoperability among different healthcare providers [38], characteristics and mindset of healthcare providers (table 2).

Benefits associated with the financial aspects are a reformation of financial transactions [59] and reduced cost of treatment (table 2). [78-79] There are certain challenges in this regard like low tertiary care enrolment rates and inadequate return on investment.[27-28] The factors required to cope up with these challenges are a solution of cost-effectiveness, making available the sources of funds and monetary value (table 2). [27-28,71]

FACTORS FOR EFFECTIVE IMPLEMENTATION OF EHEALTH IN INDIA-AT PATIENT LEVEL

It is one the first observation from Table 3 that e-health will lead to cost savings for the patients that may be one of the major advantages of it. [28, 34,70] But the key challenge is the credibility of resources required for the implementation of this programme. [70] Factors required to conquer these challenges and to implement eHealth effectively is the extent of eHealth implementation.

Another benefit as depicted is tele-healthcare, e-consultation [70] and time savings which require adequate knowledge of different tools of information and communication technology (ICT). [57-58, 61-64] To avail these benefits and beat these challenges, the important factors need to be considered at the time of implementation are a patient mindset and doctor-patient communication (table 3). [35,38]

Another major benefits are patient awareness and knowledge, reduced stress of patient and care providers. [80-82] But there are some challenges to obtain these benefits such as the privacy concern of patients. [62-64] The major factor required to be considered is a perception about eHealth of the patient and his confidence in the current health care system (table 3). [30]

TABLE 3: FACTORS FOR EFFECTIVE IMPLEMENTATION OF EHEALTH IN INDIA-AT PATIENT LEVEL

ASPECTS	BENEFITS OF EHEALTH	CHALLENGES FOR EHEALTH	FACTORS FOR EFFECTIVE IMPLEMENTATION OF EHEALTH
COST	Cost savings. [28,34,70]	Credibility of resources. [70]	Level of e-Health implementation
DISTANT DIAGNOSIS AND TREATMENT	Tele-healthcare e-consultations save time. [70]	Knowledge of Informaton and communication technology. [57-58 , 61-64]	Consumer mindset Doctor-patient communication. [35,38]
PATIENT CENTRICITY	Patient Awareness and knowledge Reduced stress to patients and care providers. [80-82]	Privacy Concerns. [62-64]	Perception about e-Health Confidence in the current healthcare system.[30]

Source: Authors Compilation

TABLE 4: FACTORS FOR EFFECTIVE IMPLEMENTATION OF EHEALTH IN INDIA-FROM GOVERNMENT PERSPECTIVE

ASPECTS	BENEFITS OF EHEALTH	CHALLENGES FOR EHEALTH	FACTORS FOR EFFECTIVE IMPLEMENTATION OF EHEALTH
HEALTHCARE PENETRATION	Increased proliferation of Healthcare. [83-84]	Low illiteracy Huge population Bridging the digital divide Poor nutritional status The multiplicity of Food Habits Diverse lifestyles Techno-legal and medico-legal issues. [57-58 , 61-64]	Government Policies. [66 and 67] Reliable Healthcare infrastructure Engagement of various stakeholders. [27]
COST	Reduced Cost of providing healthcare. [28, 34,70]	Limited Funds Low per capita income. [59-60]	Source of Funds Different solutions for rural and urban areas. [71]
HEALTHCARE REACH	Healthcare availability at far off places. [85-86]	Infrastructural issues Limited internet connectivity Vast geographical area. [57-58 , 61-65,34]	Status of e-Health readiness Social influences Human development index. [34,87]

Source: Author's Compilation

FACTORS FOR EFFECTIVE IMPLEMENTATION OF EHEALTH IN INDIA-FROM GOVERNMENT PERSPECTIVE

Increased proliferation or propaganda of health care is one of the beneficial aspects of the implementation of the eHealth system in India (table 4). [83-84] The major challenges to obtain this benefit are high literacy, huge population, bridging the digital divide, poor nutritional status, multiplicity of food habits, diverse lifestyles, techno-legal, and medico-legal issues and limited funds.[57-58, 61-64] The imperative factors as required to handle these challenges are government policies [66-67],sources of funds, reliable health infrastructure and engagement of various stakeholders. [27] Another benefit of eHealth which can be expected is the reduced cost of providing healthcare facilities.[28, 34,70] The major challenge to catch this benefit is low per capita income of India and disparity in income levels(table 4).[59- 60] To overcome this challenge there is a need to find a different solution between rural and urban areas.[71] Availability of healthcare facilities to the off places is also one of the benefits of the eHealth system (table 4).[85] But internet connectivity in a remote area, poor infrastructure and very vast geographical are the major challenges in India for the effectively implementing the eHealth system in all the parts of the country.[57-58 , 61- 65,34] The factors needed to be considered are the status of eHealth readiness in different areas and levels, social influences and human development index (table 4). [34]

CONCLUSION AND DISCUSSION

The government in India must play a pivotal role in the assimilation of healthcare with information technology. It must work in the development of infrastructure for the same and such an enormous task can be achieved by roping in private partners for sustainable success in this regard. We must not only create awareness about eHealth and its

benefits, among masses but also literacy about information technology to build swift acceptance of the concept. The private healthcare system, which is working in silos, must integrate and government can play a role in this regard by helping to develop an interoperable healthcare system. Medical practitioners must create faith in virtual healthcare delivery as owing to prevalent culture of the physician-patient relationship of trust it becomes more important to establish trust in this new aspect of healthcare delivery. Healthcare implementers must be clear of what they expect from information technology in the healthcare ecosystem, whether it is improved efficiency, better data management or distance spanning. Accordingly, they can plan implementation based on their priorities and local factors. Since, it is the acceptability of eHealth among the patients which would decide the fate and sustainability of the concept, so they must be involved in designing of any eHealth program. Various such programs have evoked a response from the patients even in rural areas, but the system must be designed in such a manner that patients have the willingness and ability to use the system. In the Indian context, especially when the patients belong to multicultural, multilingual, economically and educationally diverse backgrounds it becomes even more important that innovative means must be deployed for successful adoption of eHealth in India. The implementation of e-health must be done considering the disparity between rural and urban India. eHealth also offers an opportunity for the government to bring down the cost of healthcare and enhance the reach in remote areas. Aadhar-a Unique identification for the citizens linked with the digitized electronic health records will facilitate focused treatment and prevent duplication of data and medical tests. Due to the increased penetration of mobile networks, mobiles can be an effective good platform to be integrated with healthcare systems.

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REVIEW ARTICLE

THE IMPLEMENTATION OF OPEN DISCLOSURE IN ASIAN CULTURE IN SINGAPORE: A SYSTEMATIC LITERATURE REVIEW

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ABSTRACT

OBJECTIVE:

Open Disclosure is the process of open and honest discussion between a clinician and the patient and family when an adverse clinical event occurs while the patient is in care or treatment. While open disclosure is now a mandatory practice in many developed countries like the United Kingdom, Australia, the United States and Canada, it has yet to be made mandatory in Singapore. In most healthcare institutions in Singapore, the Clinical Governance or Quality Service Management Department manages the governance of patient safety and medical errors. This systematic literature review aims to understand the effect of Asian culture relating to apologies because of the implementation of Open Disclosure in Singapore's healthcare system.

METHOD:

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement was used to review and synthesize the contemporary literature qualitatively.

RESULTS:

This study identified that there are links between culture and apologies and in particular, the expression and acceptance of the apology. This study explored and identified the effects of Asian culture on open disclosure, specifically on apologies, and established that Asian and western cultures offer and accept apologies differently. Also, the study established the public's view and demand for open disclosure and the impact of culture on how a person presents oneself in delivering an apology.

CONCLUSION:

The study could only identify five high-quality articles in this systematic literature review; there were no papers on the mindset and perceptions of Asian healthcare professionals on apologies and open disclosure found. This present study has demonstrated a significant research gap that is a significant opportunity for future research.

KEYWORDS

open disclosure; healthcare; apologies; culture; Asian; apology laws; Singapore

KEY QUESTIONS SUMMARY

What is known about the topic?

It is well established that there are many benefits of Open Disclosure (OD) to patients, healthcare professionals and healthcare institutions. The implementation of OD as one or part of national standards and in healthcare organisations in well-developed countries like Australia, the United Kingdom, the United States and Canada. A patient's cultural background and social values play an essential role in healthcare delivery, and decision-making and cultural diversity should be acknowledged and respected by healthcare professionals and organisations. Some of the barriers to acceptance of OD may be related to cultural and social background.

What does this paper add?

This study will help healthcare professionals in Singapore and other Asian nations understand the knowledge gaps in OD related to apologies in Asian culture. This knowledge will benefit health services managers in the implementation

of OD by understanding the importance of cultural differences and concerns of OD in Asian culture.

What are the implications for practitioners?

This knowledge will widen understanding and awareness of OD and the change management requirement for the implementation of OD in Singapore and other Asian cultures and will ultimately benefit healthcare services delivery in countries with a predominance of Asian people.

INTRODUCTION

It is vital to ascertain that the acceptance of disease is dependent on the cultural background and social values of a patient and culture play a role in the dictation of the legal consequences of any doctor-patient communication and relationship. Etienne, Pierce [1] conclude that a patient's culture, race and social background play a significant role in healthcare delivery and decision-making. Cultural diversity should be acknowledged and respected by healthcare professionals and organisations when managing patients. For the best approach to patient care, the integration of cultural humility, which is a concept related to both cultural care and cultural competence, should be considered. [2]

Open disclosure (OD) is the process of offering apology and acknowledgement of error and (or) the effect of the adverse event [3, 4]. When an adverse clinical event happens, the patient and family expect an apology, an explanation of what happened and follow-up action to prevent future harm or errors [5]. However, in Singapore and many other Asian countries, OD is not always practised by healthcare professionals, often due to fear of mitigation risks in OD [6, 7]. Failure to apologise or inappropriate apology when a mistake happens often leads to patient taking their complaints further, including litigation. [8]

The primary aim of this study is to understand the effects of Asian culture on OD, with a specific interest in apologies and understand the perceptions of open disclosure in Asian culture for both the healthcare professionals and healthcare consumers to implement OD in Singapore healthcare system.

BACKGROUND

Clinical misadventures are unintended clinical outcomes that a patient experience while under medical care, which may or may not be the result of a mistake caused by any members of the attending medical team. [6] When a clinical misadventure occurs, clinicians have the duty of candour to the patient to disclose the event [9] openly and transparently.

Open disclosure is the process of an open and honest discussion between a clinician and the patient and family members of the adverse event that has caused harm to the patient while receiving care. [4] The process of OD includes the offering of apology and acknowledgement of error and (or) the effect of the adverse event. [3, 4]

Relevant research by Fein and colleagues, [10] found that clinicians and patients view disclosure of errors differently. Also, not only do patient safety experts, professional bodies and ethicists strongly support Open Disclosure, physicians surveyed are also in agreement that harmful errors should be disclosed to patients however they may not always follow this practice [10]. OD benefits the patient, healthcare professionals and healthcare institutions [11], and improves clinical outcome and manages litigation risks. [9]

Some barriers to the acceptance of OD include the perception of legal risks, [6, 12] the uncertainty of how much to disclose [13] and the reluctance to admit error. [14] There has been an exploration of some of these issues in countries like Australia, the United Kingdom and Canada, that have implemented "Apology Laws" that declaring an apology does not equate to an admission of liability. [15]

Cugueró-Escofet and colleagues [16] assert that an apology has two main functions, a moral and a social function and identify that the sincerity of an apology is critical for the attainment of these functions. Morally, an apology dismisses the threat of unfairness by addressing the need for meaningful and moral thing to be done [16] and socially, bystanders perceive them, the victim's social standing re-affirm when there is an offer of an apology.

The three main barriers to apologies are "a sense of insignificant levels of concern for the victim or the relationship with the victim"; a "perception of apology causing damage to one's self-image" and a "perception

that apology is unproductive to obtaining forgiveness from the "victim". [7]

OD is a topic of significance in discussion throughout the world. Singapore's healthcare system has been evolving continuously and improved since the implementation of the 3M program health system in 1984. [17] Contributing to the successful healthcare cost control of the Singapore health system, the first tier of the 3M program, Medisave, a mandatory savings plan for medical expenses, was implemented in 1984, followed by the second tier of funding, Medishield, which is a national insurance plan implemented in 1990. The last tier of the 3M program is Medifund, implemented in 1998, as a safety net for Singaporeans who are not able to afford their medical expenses. [17]

To maintain progress with the rest of the world, Singapore must look into the implementation of OD. This research explored evidence connected to apologies in the context of culture and more specifically apologies within Asian culture. the effects of Asian culture on OD and the potential of implementing OD in Singapore healthcare system in answer to the question What effect does Asian culture relating to apologies have on the implementation of Open Disclosure in Singapore?"

OBJECTIVES

The four specific objectives of this study were to:

- Understand the link between culture and apologies;
- Explore the effects of Asian culture on OD, specifically on apologies;
- Understand the perceptions of OD in Asian culture for both healthcare professionals and healthcare consumers;
- Understand how Asian culture in Singapore can impact acceptance and the implementation of OD in Singapore healthcare by the Ministry of Health.

The results will help healthcare professionals in Singapore understand the knowledge gaps in OD related to apologies in Asian culture and help inform policy and practice related to OD in Singapore and other Asian countries. This knowledge will benefit health services managers and clinicians to develop plans for the implementation of OD in Singapore by understanding the cultural differences and concerns of OD in Asian culture, widen understanding and awareness of OD. It will also inform the change management requirements for the implementation of OD in Singapore, which will ultimately benefit Singapore healthcare services delivery specifically and other Asian countries generally.

METHOD

This systematic literature review was conducted using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. [18] The quality appraisal tool for qualitative and quantitative research [19] was used to provide a recognised scoring system to assess the quality of identified screened papers for the present analysis. The scoring of the identified literature is executed with a publicly available 10-item checklist for qualitative studies, as shown in table 1 and a publicly available 14-item checklist for quantitative studies, as shown in table 2. Individual scores of each identified paper screened for 'yes', 'partial' and 'no' were summed to create the Standard Quality Assessment Score (SQAS) [19], which completes the scoring for this present study, concluded in table 4.

TABLES AND FLOW CHART

TABLE 1. ASSESSMENT OF QUALITY OF SCREENED IDENTIFIED QUALITATIVE STUDIES FOR THIS PRESENT STUDY USING STANDARD QUALITY ASSESSMENT SCORE (SQAS). SOURCE KMET, COOK (19)

CRITERIA		YES (2)	PARTIAL (1)	NO (0)
1.	Question/Objective sufficiently described?			
2.	Study design evident and appropriate?			
3.	Context for the study clear?			

4.	Connection to a theoretical framework/wider body of knowledge?			
5.	Sampling strategy described, relevant and justified?			
6.	Data collection methods clearly described and systematic?			
7.	Data analysis clearly described and systematic?			
8.	Use of verification procedure(s) to establish credibility?			
9.	Conclusions supported by the results?			
10.	Reflexivity of the account?			

TABLE 2. ASSESSMENT OF QUALITY OF SCREENED IDENTIFIED QUANTITATIVE STUDIES FOR THIS PRESENT STUDY USING STANDARD QUALITY ASSESSMENT SCORE (SQAS). SOURCE KMET, COOK (19)

CRITERIA		YES (2)	PARTIAL (1)	NO (0)	N/A
1.	Question/Objective sufficiently described?				
2.	Study design evident and appropriate?				
3.	Method of subject/comparison group selection or source of information/input variables described and appropriate?				
4.	Subject (and comparison group, if applicable) characteristics sufficiently described?				
5.	If interventional and random allocation was possible, was it described?				
6.	If interventional and blinding of investigators was possible, was it described?				
7.	If interventional and blinding of subjects was possible, was it described?				
8.	Outcome and (if applicable) exposure measures(s) well defined and robust to measurement / misclassification bias?				
9.	Sample size appropriate?				
10.	Analytic methods described/justified and appropriate?				
11.	Some estimate of variance is reported for the main results?				
12.	Controlled for confounding?				
13.	Results reported in sufficient detail?				
14.	Conclusions supported by results?				

SCOPE AND INFORMATION SOURCE

This present study includes peer-reviewed, scholarly academic journal articles with online full-text and abstractions availability, published in the English language from December 2013 to November 2018. The inclusion and exclusion criteria set out for this systematic review of the literature is contained in table 3. Articles found are indifferent, high-ranked electronic databases retrieved via the Griffith University Library, namely Pacific Focus, Springer Link, ProQuest, De Gruyter, PlosOne and Wiley Online databases.

KEYWORDS SEARCH STRINGS

Keywords were formulated in combination and searched using Boolean operators and truncation symbols from the Griffith University library search engine with expansion to beyond Griffith Library's collection.

RESULTS

Applying the screening process using the PRISMA method, [18] out of the 104 articles found using the inclusion and exclusion criteria listed in table 3, the five evidence-based articles identified, as shown in figure 1, were then critically reviewed in full-text using the Standard Quality Assessment Scale (SQAS) [19], as shown in table 1 and table 2. Table 4 summarises the qualitative synthesis of the five identified articles included in this systematic literature review.

The common themes of culture and apologies were present in all five papers. Four papers shared similar themes in the cultural effect of apologies and ascertain that for an apology to be deemed sincere and complete, acknowledgement of the act of harm done with an appropriate choice of words in the apology and follow-up action required for the Asian culture. [20-23] Also, there are differences in the expression of apology between Asian and Western cultures. [20] The benefits of OD, along with the public's favourable view and demand for OD when adverse clinical events happen, and the possible reduction of psychological burden on the healthcare professional is evident. [24] The impact of culture on how a person presents oneself in the delivery of apology is ascertained. [23]

TABLE 3. INCLUSION AND EXCLUSION CRITERIA USED IN IDENTIFIED LITERATURE IN THIS STUDY

INCLUSION CRITERIA	EXCLUSION CRITERIA
Literature published between December 2013 to November 2018 **Publication criteria** Peer-reviewed Academic Journal Article Full text online with abstraction available In the English language **Study population** Healthcare, Ethics and Law, Social Science and Social Psychology	Literature published before December 2013 and after November 2018 Literature that does not include "culture" or "Asian culture" or "apology."

FIGURE 1. PREFERRED REPORTING ITEMS FOR SYSTEMATIC REVIEWS AND META-ANALYSES (PRISMA) DIAGRAM AND SUMMARY OF FINDINGS AT EACH LEVEL. SOURCE: MOHER, LIBERATI (18)

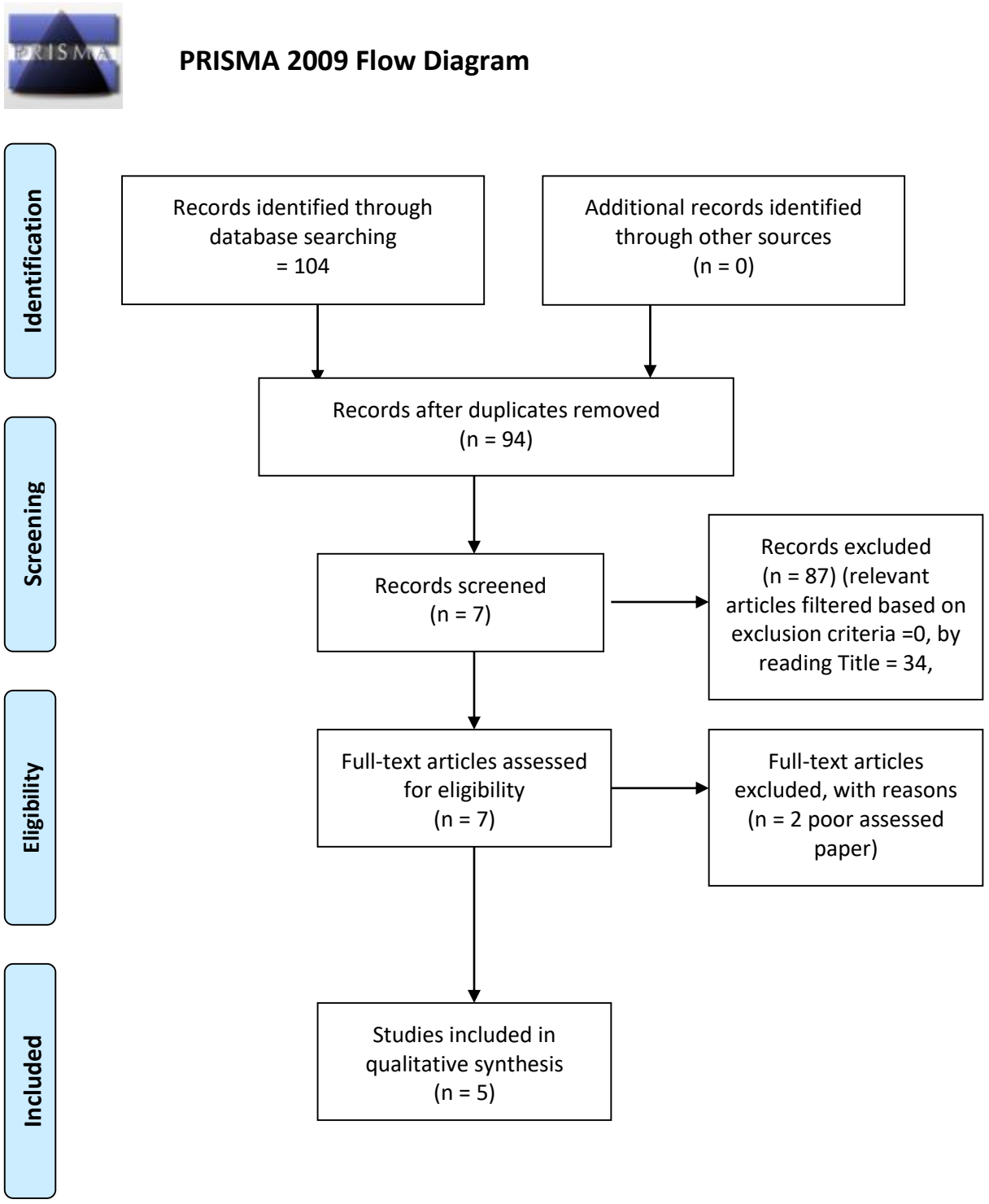

TABLE 4. STUDIES INCLUDED IN QUALITATIVE SYNTHESIS

NO.	AUTHOR	TITLE	SUMMARY	SQAS
1.	Chun [21]	Beyond "Dissatisfaction" and "Apology Fatigue": Four Types of Japanese Official Apology	This narrative review aims to assess whether the apologies Japan offered to its neighbours for many of its actions during World War II are complete and sincere. Over the last 70 years since the end of World War, several Japanese political leaders have made many attempts of apology. However, it is deemed that its neighbouring countries demand a more utilitarian apology. By summarising Japan's past apologies into the four categories: *Political Rhetoric, Faint Apology*, *Insufficient Apology*, *Sincere Apology,* the author ascertains that at least one genuine and momentous apology has been made. However, there is difficulty in defining the level of Japan's apologies sincerity from the views of the victims. The author hopes that by using the framework of "Acknowledgement " or "Action", the results of this study could provide Japan with a future apology more readily accepted by its neighbouring countries. Although this study is not set in the healthcare environment, it highlights the cultural effect of apologies. For an apology to be deemed sincere and complete, acknowledgement of the act is required, along with the appropriate choice of words to be used and follow-up action for harm caused. Offering an apology with "I am Sorry" and acknowledgement of the harm done, may be culturally difficult, in this case for Japan, but it is necessary for an apology to be deemed sincere and complete.	**16**
2.	Jones and Adrefiza [20]	Comparing apologies in Australian English and	This is a cross-cultural study between Australians and Indonesians on understanding the cultural	**20**

NO.	AUTHOR	TITLE	SUMMARY	SQAS
		Bahasa Indonesia: Cultural and gender perspectives	differences in the expression of apologies. The study shows that there are differences in actual apologising acts and the offering of the expressions of regret are culturally different. While Australians are less formal in expressing regret, using words like "sorry" or "really sorry", the Indonesians offer more formal, complex expressions and variety words of apology and requests for forgiveness. By comparing the western culture (the Australians) and the Asian culture (the Indonesians), this study concludes that culture affects the delivery and expression of apology and how therefore apologies would be perceived when offered.	
3.	Lin [22]	The Restorative Role of Apology in Resolving Medical Disputes: Lessons from Chinese Legal Culture	This study explores the structure of apologies within the Chinese cultural context, from the perspective of Confucianism and presenting a three-dimensional structure of apology, defines as "acknowledgement of fault", "admission of responsibility" and "offer of reparation" to be applied in resolving medical disputes. The paper concludes that a wrongful act harms relationship, the three-dimensional structure navigates apology in the direction of relationship restoration, thereby restoring the harmony of ethical relationships.	**20**
4.	Ock, Choi [24]	Evaluating the expected effects of disclosure of patient safety incidents using hypothetical cases in Korea	This study is on South Korean's public views on the expected effects of open disclosure of patient safety incidents using hypothetical cases of past studies. General public of different demographics, gender and age, were recruited for the study via face-to-face interviews.	**20**

NO.	AUTHOR	TITLE	SUMMARY	SQAS
			The findings show that open disclosure benefit both the patients and physicians in the areas of increased physician-patient trust, reduced perception that the incident is a medical error, increased patients' willingness to revisit and recommend physicians, decreased potential legal actions against physicians and reduced expected amount of monetary compensation. This South Korean study uses hypothetical cases, and the authors conclude that the general public of South Korea is in favour of open disclosure of patient safety incidents. The result of the study provides evidence of reduced physiological burden that open disclosure might have on healthcare professionals.	
5.	Shafa, Harrick [23]	Sorry seems to be the hardest word: Cultural differences in apologising effectively	A quantitative study, this paper seeks to understand how cultural difference in response and managing conflicts and perceptions of apologies using an online survey. The difference between Asian cultures, represented by the Turkish the western culture, represented by the Dutch. The authors ascertain that culture has an impact on how a person presents oneself the delivery of apology. The study concludes that in the cultural context, an apology needs to convey the right message in either acknowledging fault by accepting blame or expressing remorse for an apology to be considered effective and sincere. ***Note** - this is a quantitative paper with a possible maximum score of 28 attainable. Three items deemed not applicable; therefore, the possible maximum score for this paper is 22*	**19** ****Note**

DISCUSSION

This systematic literature review ascertains that open disclosure and apology benefits both patient and healthcare professionals in that it opens up physician-patient trust, reduces perceptions that the incident is a medical error, increases patients' willingness to revisit and recommend physicians, decreases potential legal actions against physicians and reduces expected amount of monetary compensation [24]. This finding supports the positive benefits of OD to not just the healthcare consumers and the healthcare professionals but also healthcare institutions.

For an apology to be deemed sincere and complete, acknowledgement of an act of harm done is required, along with the appropriate choice of words to be used and follow-up action for harm caused. Offering an apology with "I am Sorry" and acknowledgement of the harm done, may be culturally difficult, in this case for Japan, but it is necessary for an apology to be deemed sincere and complete. [21] This result ascertains the impact of culture on offering an apology, which would be an influential and crucial factor when implementing OD in Singapore healthcare system to expect healthcare professionals' resistance in acknowledging the harm done and offering an appropriate choice of words in apology.

The Asian culture views open disclosure and apology no differently from the western culture and is in favour of it when clinical adverse events happen. [24] The delivery of an apology in the Asian culture differs from the western culture in that Asians, [20] would consider the choice of appropriate words used in an apology, the acknowledgment of fault and the request for forgiveness or expressing remorse is required for an apology to be deemed sincere and complete. [20-23] There is an emphasis on choosing appropriate words to be used in an apology is emphasised in all of the five articles screened; this finding highlights the impact of cultural bearing in both the person offering the apology and the receiver of the apology. To acknowledge the harm done and offering follow-up action to put things right supports the process of OD. This knowledge is a critical consideration if the Ministry of Health, Singapore were to explore the implementation of OD in Singapore.

There is no evidence found in this study that describes how culture affects Asian healthcare professionals in their mindsets and their views on open disclosure and offering an apology. However, the study by Ock and colleagues, [24] assert that open disclosure might have the effect of reducing physiological burdens on healthcare professionals. The lack of this information means that it is unknown whether or not healthcare professionals would embrace the implementation of OD, if rolled out by the Ministry of Health, Singapore. This unknown territory would relate to higher incidences of resistance in the change management. Therefore, further studies are required to explore how culture affects Asian healthcare professionals in the open disclosure process and how an apology would be delivered when adverse clinical events occur.

CONCLUSION

Conclusions drawn need to be viewed on that basis that there were only five papers found in this systematic literature review addressed the objectives of this present study and that met the quality requirements established. From these five papers it appears there may be a link between culture and apologies and the effects of Asian culture on OD are established [20-24] however this requires further research. Also, it appears that it is the appropriate choice of words used, the acknowledgement of the harm done and follow up with action, when expressing remorse, could be crucial in the link between Asian culture and apologies in OD. [20-24] From these papers it seems that there is no difference in perception of OD and apology between the Asian and western cultures with both cultures being in favour of OD when the clinical adverse event occurs [24] however further research is required to establish with a more rigorous way. The public views OD and apology to be beneficial for both the patient and healthcare professionals. [24]

Further research into this is required to understand how Asian healthcare professionals perceive OD and understanding the acceptance and implementation of OD in Singapore and perhaps other Asian countries.

Although there is no evidence found in this study on the perception and acceptance of OD from the view of healthcare professionals, Ock and colleagues [24] assert that OD might reduce psychological burdens on healthcare professionals in such cases; interpretation of this could be that OD could reduce feelings of guilt on the part of healthcare professionals for the unintended harm done

to the patient. Thus this may be evidence that OD might be an additional positive direction to adopt.

It is acknowledged that with the exception of Ock and colleagues [24] there was no review of literature relating to fear of litigation and how this relates in Asian culture apart from there being no legal privilege provided in Singapore. There are concerns such as fear of litigation; the confidential and time-consuming nature of clinical incident investigations; lack of organisational support; increasing costs of medical malpractice insurance; fear; and that open disclosure is too difficult. [25] In the qualitative research undertaken by Harrison and colleagues found five themes which appear to capture critical factors in supporting open disclosure of as a moral and professional duty, positive past experiences of open disclosure, perceptions of reduced litigation, role models and guidance and clarity [26] however, these studies were conducted in the UK and may not be applicable to Asian culture. The need to be further explored in future research

This systematic literature review has ascertained the effects and impact of culture on apologies and what is required for a sincere and complete apology to be accepted. Also, the appropriate choice of words in an offering of an apology, the prerequisites for acknowledgement of the harm done and action following acknowledgment and apology have been ascertained in OD. Based on the knowledge and gaps identified in this systematic literature review, barriers of OD and apology must first be acknowledged and overcome before the implementation of OD in Singapore could be effectively be implemented.

RECOMMENDATIONS

Based on the findings of this systematic literature review, implementing OD in Singapore is a significant cultural change. As culture change can be challenging, the change management requires careful planning and include policy direction and training of clinical staff and healthcare managers. [8]

Perception of legal risks [6, 12] and uncertainty regarding how much to disclose [13] are two barriers in OD and could be overcome by Apology Law as these will protect healthcare professionals from having this used in evidence if medico-legal claims are lodged. [15] Such laws would encourage healthcare professionals to comfortably offer apologies and acknowledge error or harm done to a patient, which in turn, reduce mitigation risks. [24]

Reluctance to admit error [14] and reluctance to offer apologies [7] are the other two barriers in OD. These barriers could originate from fear of losing their jobs, or the cultural perception that apologising is considered to be unfaithful to their colleagues or their employers. [27] Training of employees to offer an apology and admit errors when adverse clinical events occur could address these barriers. [27, 28]

It is clear that more research is needed to better understand the perception of OD even before any implementation of Apology Laws in Singapore. Such research needs to address any benefits of OD and the cultural and social obligations ascertained in this study. Such research sponsored by the Government of Singapore prior to any mandate concerning the implementation of OD.

Change needs to be led from the top including enacting Apology laws to provide privilege for those who fully engage in the OD process including the provision of an appropriate and adequate apology.

It is recommended that:

1. Singapore implements "Apology Laws" similar to other common law countries such as the United Kingdom and Australia

2. Counter the reluctance to admit error by evidence-based reassurance and training

3. Lead the change from the Top by:

   a. The Singapore Government auspicing research into OD in Singapore and mandate its implementation in health care services offered in Singapore based upon the successful implementation in other countries such as Australia, UK and Canada customised for the Singaporean context.

   b. Drafting and enacting Apology Laws similar to the ones that operates in a number of States of Australia.

LIMITATIONS

Open disclosure in Asian culture is an area where there is a significant research gap and only five high-quality papers were found that addressed the research question. Significantly more research is required in understanding Asian culture as the studies found represent only a fraction of what could be considered as Asian culture and may not be representative when more research is available.

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RESEARCH ARTICLE

TO REMAIN, MIGRATE ABROAD OR RESETTLE: A COMPLEX DYNAMIC PROCESS AFFECTING PAKISTANI PHYSICIANS' CAREER DECISIONS

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ABSTRACT

OBJECTIVE

This study investigated Pakistani physicians' decision-making concerning their decisions to stay in Pakistan, migrate abroad, or resettle back into their country after working abroad.

METHODS

This qualitative study employed a phenomenological research design. Thirteen Pakistani physicians characterised as 'stayers', 'leavers' and 'resettlers' were interviewed via telephone to explore their lived experience in 2008-2009.

RESULTS

Results show a dynamic nature of the physicians' career decision-making depending on their constant weighing of complex personal, family, professional and societal factors. Stayers, leavers and resettlers are not mutually exclusive groups but rather individual physicians' can move between these groups at different stages of career and life. Physicians vary in their decision making. Stayers and resettlers place more emphasis on personal and family reasons and societal factors providing there is a permanent job for them. Leavers focus on health system problems and recent societal problems of personal and societal insecurity.

CONCLUSIONS

The findings of this study indicates that physician migration, retention and resettlement is a complex issue and there are multiple personal, social, political and economic factors that affect their decisions to stay, move abroad or resettle back into their countries. Therefore, it is recommended that future research focusing on health workers retention, migration and resettlement issues look at it from a holistic perspective rather than focusing only on the economic and professional imperatives. The findings of this study have international implications for health care managers dealing with a highly mobile international medical workforce. Strategies considering different stages of the physician career/ life cycle need to highlight the importance of identity, belonging and place as doctors weigh this with career goals.

KEYWORDS

Career decision-making; Doctors; Overseas migration; Physicians; Recruitment; Retention; Resettlement; Pakistan

INTRODUCTION

The misdistribution of highly skilled health professionals including physicians, both within a country and internationally, is of growing concern globally because of its impact on health systems in developing and developed countries alike. This has become a near universal problem, particularly in developing countries. Shortages in health care staff have intensified as a result of both the emigration of health care workers from developing to developed countries and the intra-country imbalances between rural and urban areas. [1-4]

As identified in the literature, low salaries, shortages of supplies and work overload leading to unsatisfactory work conditions, political instability, insecurity, poor living conditions, inadequate social services, poor education services for children and lack of continued professional development are some of the economic, political and social factors influencing health professionals to migrate. [5-8] However, much less is known about the factors that influence physicians' decisions to either stay in their countries, migrate abroad or re-settle back into their countries after living and working for some time in another country.

Overseas trained health care professionals represent more than a quarter of the medical and nursing workforces of Australia, Canada, the UK and the USA. [9] International medical graduates (IMGs) constitute 23–28 percent of physicians in the USA, Canada and Australia, and lower income countries supply 40-75 percent of these IMGs. [10-11]

Pakistan faces a shortage of physicians particularly in rural areas of the country. [12-13] Despite this local need, beside India and the Philippines, the majority of migrant physicians working in the United States, the United Kingdom, Canada and Australia are of Pakistani descent. [14] According to an estimate, out of 5400 graduates in 2016 around 1100 physicians have left the country and this trend is expected to increase further. [12] Furthermore, according to the Joint Learning Initiative (JLI) report, Pakistan is among the 45 countries in the world that is suffering from an acute shortage of health workers (doctors, nurses and midwives), which is defined as less than 2.5 workers per 1000 population, and high-mortality rates. [15]

This study was conducted in an effort to fill this gap and broaden the base of systematically collected data on physician migration and retention in a developing country context. Therefore, the purpose of this study was to explore the perceptions of Pakistani physicians regarding their career decision to remain in their country, migrate abroad or resettle back into their country after working abroad for some time. The focus is on understanding the Pakistani physicians' interpretations of their personal, professional and societal experiences that affected their career decision about whether to stay in their country, migrate abroad or resettle back into their country after working and living abroad for some time.

In order to address the purpose of this study, which is to explore the reality, perceptions and the lived experiences of Pakistani physicians, four specific aims were developed. These aims were to i) explore the perceptions of Pakistani physicians regarding their career decision to remain in their country and not move overseas; ii) explore the perceptions of Pakistani physicians regarding their career decision to migrate abroad; iii) explore the perceptions of Pakistani physicians regarding their career decision to initially go abroad and then resettle back to their country and iv) identify the problems encountered by Pakistani physicians during the process of resettlement back into their country after working abroad for some time.

This first overview paper presented here is a part of a larger study conducted by the principal investigator as part of his doctoral thesis, which is freely available online. [16] Therefore, for the purpose of this paper; only the major findings and conclusions that address the overall purpose of the study will be presented and discussed. Other findings that address the four specific aims will be presented in subsequent publications.

While the results of this study were obtained in 2009-2010, this paper argues that they are still relevant and add to literature on human resources for health in Pakistan. A recent paper by Siddiqui et al. [17] recommends using locally developed career decision instruments relevant to the Pakistan situation. Similarly, Malik et al. [18] recommends further studies using exploratory methods to understand the underlying factors for Pakistani physician's recruitment, retention and migration decisions. Furthermore, the results of this paper are particularly relevant with the devolution of health care to provinces in Pakistan with human resources for health strategies being developed in provinces. [19]

METHODS

STUDY DESIGN

This qualitative study employed hermeneutic phenomenology as the research design. This interpretive research design was chosen because it provides the most appropriate design to research the lived experience from the unique perspective of the individual at a particular point in time. The intention of this study was not to quantify the process of decision-making but rather to draw out the experiences of the individual doctors about their career

decision to remain in Pakistan, migrate overseas or resettle back into Pakistan.

STUDY SETTING AND POPULATION PROFILE

This study was conducted via telephone interviews in both Pakistan and Australia. Semi-structured interviews were conducted with Pakistani physicians working in the four provinces of Pakistan namely Khyber Pakhtunkhwa (formerly North West Frontier Province), Balochistan, Punjab and Sind and in the states of New South Wales, Queensland and Western Australia in Australia. The population for this study consisted of Pakistani physicians who obtained their primary medical qualification from Pakistan and were working as physicians either in Pakistan or Australia at the time of the study.

In line with the aim of the study, the population of interest was divided into three broad categories that is, '*Stayers*', '*Leavers*' and '*Re-settlers'*. '*Stayers*' were those Pakistani physicians who obtained their primary medical qualification in Pakistan, had never migrated to another country and were working in Pakistan at the time of this study. '*Leavers*' were those Pakistani physicians who obtained their primary medical qualification in Pakistan and at the time of the study were working in Australia. '*Re-settlers'* were those Pakistani physicians who obtained their primary medical qualification in Pakistan, had migrated to another country and had re-settled back and were working as physicians in Pakistan at the time of this study.

DATA COLLECTION PROCEDURE

Data was collected between September 2008 and July 2009. Semi-structured interviews were conducted with 13 participants who were selected using a combination of both purposive and snow-ball sampling. Before actual data collection, two pilot studies were conducted to ensure that the informants understand the intended meaning of the questions and the researcher understands the informant's answers, to identify problems and also to add to reliability through pre-testing. [20-21] The interviews were conducted via telephone using the interview schedule and audiotaped with participant permission. All the interviews were conducted either in English, Urdu (Pakistan national language) or Pushto (one of Pakistan's regional languages) as desired by the participants. These were then translated and transcribed in English by the principal researcher. The translated transcripts were shared with the participants for validation and to confirm if the researcher has correctly captured their lived experiences. All the participants were medical doctors and were educated with English as their first language and were well versed with the English language.

DATA ANALYSIS

A thematic analysis technique was used to analyse the interview transcripts. Data analysis commenced along with the data collection, as in a qualitative study, data collection and data analysis are interrelated processes. [22-23] The principal researcher then read and re-read the transcripts highlighting and coding those words, phrases or passages of interview content that addressed the study aims. These were then categorised into themes in order to provide a clear description of the experiences of Pakistani physicians' as Stayers, Leavers or Re-settlers.

After conducting the transcription and coding of each set of two to three interviews by the principal researcher, the transcripts were then read and coded individually by two other researchers. The results of this analysis by the three researchers were compared in review meetings and any differences were discussed until agreement was reached. This use of multiple researchers during the data analysis increased the rigour and trustworthiness of the data.

Rigour and trustworthiness of the data were maintained by using the criteria of credibility, transferability, dependability and confirmability. [24] Credibility of the study was addressed by prolonged engagement with the study participants before and during the interviews, through respondent validation, by providing a copy of the respective transcript to the study participants to provide feedback and to make any clarification or change to the written transcript. Credibility was further enhanced by presenting the preliminary findings of this study at two conferences at the University of New England, Australia to obtain peer review. Transferability was addressed by providing a detailed description of the relevant literature, study methodology together with the settings and the data collection methods, data analysis, findings and conclusions. Dependability and confirmability were achieved by systematically managing the study records that constituted an audit trial.

ETHICAL CONSIDERATIONS

Approval to conduct this study was obtained from the University of New England's Human Research Ethics Committee. Willing participants were approached by the principal researcher and provided an information sheet and consent form. Informed consent was given for the

interviews to be audiotaped and pseudonyms were used to de-identify the participant in the transcriptions.

RESULTS

The factors that affected Pakistan physicians' career decisions are clustered into three categories as themes and subthemes: personal characteristics and family factors, health system factors and societal factors. In some of the categories, no factor was identified by the participants during their discussions.

The study results showed that the main personal and family factors that influence Pakistani physicians' decision to stay in their country were their identity and belonging to their country and culture, a desire to serve their own people, their family attachment and the availability of family support in Pakistan. The health system factor that influenced their retention decision was having a permanent job in Pakistan and a societal factor of their perception of differentiation between locals and non-locals abroad (Table 1).

TABLE 1: FACTORS INFLUENCING PAKISTANI PHYSICIANS' CAREER DECISIONS TO REMAIN IN THEIR COUNTRY AND NOT MOVE OVERSEAS

CATEGORY	FACTOR
PERSONAL CHARACTERISTICS AND FAMILY FACTORS	IDENTITY AND BELONGING *Basically, we want our kid's relationship with our culture and religion to remain intact. I mean we don't want them to spend their life in this environment and not know anything about their religion and culture. So this is our basic aim.* (Physician leaver-5) DESIRE TO SERVE OWN PEOPLE *Well, I want to give service to our people and our community here. I mean what I have learnt; I give service to our community. So, that's why.* (Physician stayer-2) FAMILY ATTACHMENT AND SUPPORT *If everyone runs away, then things will not improve ... At least we should all come back and then collectively do a struggle. We have to make this system better. Our time has passed but at least our coming generations will get a better environment and a better country. Whatever we have suffered, at least the coming generation should get a better country. If all of us were running out for economic reasons then there will be no improvement in this country. This is our identity.* (Physician resettler-3)
HEALTH SYSTEM FACTORS	HAVING A PERMANENT JOB IN PAKISTAN *For us, one of the reasons to stay in Pakistan was that we were selected as consultants very young, so we had a career in front of us and after some time we will become senior consultants and chief consultants. Then I will get a pension, and have health benefits. So, from government service I have many benefits. Although I am not heavily paid but still whatever I am paid and the practice that I have ... I have hands-on protection.* (Physician stayer-4)

	LESS DIFFERENCE BETWEEN LOCAL AND OVERSEAS EARNINGS *Well even abroad I will get the same package of PKR 100,000 to PKR 150,000 per month which with my private practice I am getting here too. So, I think one should not waste time abroad and instead give time to one's own private set up.* (Physician stayer-3)
SOCIETAL FACTORS	PERCEPTION OF DIFFERENTIATION BETWEEN LOCALS AND NON-LOCALS *Abroad, we are hearing from people that there is a difference between local and non-locals and even in Arab countries between Arabs and non-Arabs. And in European countries, I have heard from some doctors that when you are travelling in a bus, the English person will not sit with you on the same seat and instead will sit on another seat and your seat will remain empty. So, you feel very strange.* (Physician stayer-3)

Those Pakistani physicians who left their country and went overseas did so mainly because of health system problems and a few societal factors. The health system factors identified were lack of health human resource policy and planning, lack of availability of good postgraduate medical training, poor career structure, less professional development opportunities and lower salaries to these doctors in Pakistan. The societal factors that compelled these physicians to leave their country were the non-recognition of health as a state priority, a culture of valuing overseas training and increasing personal insecurity and societal degradation in Pakistan (Table 2).

Similarly, the results of this study also revealed several factors that encouraged Pakistani physicians who had gone abroad for further studies or work to resettle back into their country. These factors included a perception of a better quality of life in Pakistan as compared to overseas, the availability of a permanent job in Pakistan and feelings of differentiation between locals and non-locals abroad (Table 3).

TABLE 2: FACTORS INFLUENCING PAKISTANI PHYSICIANS' CAREER DECISIONS TO MIGRATE ABROAD

CATEGORY	FACTOR
PERSONAL CHARACTERISTICS & FAMILY FACTORS	NO FACTOR WAS IDENTIFIED IN THIS CATEGORY BY THE PARTICIPANTS
HEALTH SYSTEM FACTORS	LACK OF HEALTH HUMAN RESOURCE POLICY AND PLANNING *... as long as you have a proactive policy in Pakistan ... to push the health care facilities outwards towards remote areas, doctors will follow. The doctors need their basic facilities. I mean if you expect a doctor to go and sit in a God forsaken village where he is the only educated person and he has nothing to deliver what he has learnt, obviously he is not going to stay there.* (Physician leaver-1)

	LACK OF GOOD POSTGRADUATE MEDICAL TRAINING *There is a lot of difference. Our [Pakistani] training is not at all structured. Our training is just like an apprenticeship, like here you sit a child with a mechanic so that he will learn at least something. It is the same here … There is no structured training.* (Physician resettler-3) LACK OF PROPER CAREER STRUCTURE AND PROFESSIONAL DEVELOPMENT *There is training and then there is career progression. So, that was not like that. That was just a job but that was not useful for career progression.* (Physician leaver-3) LOWER SALARIES *... in Pakistan you do medicine in 7/8 years and then you do house job and training after doing graduation, and when you have not reached the consultant level you can't support your family. And especially for males where they are the only earning member, they can't support their families on their salary.* (Physician leaver-5) OVERSEAS DEMAND *Then after that [graduation and internship] I was unsure whether to go to America or England. That was the time when you had a lot of choice. You could go anywhere. In England at that time you could get full registration ... so for postgraduation I went to England.* (Physician leaver-4)
SOCIETAL FACTORS	HEALTH AS A STATE PRIORITY *... you know in Pakistan the disparity between your major cities and rural areas is tremendous. Your health care in Peshawar [provincial capital of NWFP] is 21st century while your healthcare in Data Khel village which is 200 miles [from Peshawar] is Stone Age. So, the disparity is tremendous and that needs investment and in a country that is struggling for all sorts of economic development, health is a fourth/fifth priority. It should be first, but it is a fourth and fifth priority.* (Physician leaver-1) CULTURE OF VALUING OVERSEAS TRAINING *Our people have this psyche that when someone does something abroad it has a good impression on the people in Pakistan. So, then people are interested in doing their degrees abroad.* (Physician leaver-5) PERSONAL INSECURITY AND SOCIETAL DEGRADATION *Now, I am saying that I am satisfied economically with my job. So, it is sometimes because of the security situation that I think about going abroad, otherwise, now economically there is not much difference for me.* (Physician stayer-3)

TABLE 3: FACTORS INFLUENCING PAKISTANI PHYSICIANS' CAREER DECISIONS TO INITIALLY GO ABROAD AND THEN RESETTLE BACK TO THEIR COUNTRY

CATEGORY	FACTOR
PERSONAL CHARACTERISTICS & FAMILY FACTORS	*QUALITY OF LIFE VERSUS STANDARD OF LIFE *You know the standard of life was good abroad, but the quality of life was good here. Even now the standard of life may be very good over there, but the quality of life is good over here.* (Physician resetter-1)
HEALTH SYSTEM FACTORS	HAVING A PERMANENT JOB IN PAKISTAN *Alhamdulillah (thanks God), I spent 6 years there and in the last year my salary was almost doubled but I had to come back for my family and to continue my service here. I thought that if I continue in Saudi Arabia then maybe I will have to discontinue my service in Pakistan. So, there was no more choice for me to stay in Saudi Arabia and I had to come back. So that's why I decided to come back and continue my service.* (Physician resettler-4)
SOCIETAL FACTORS	FEELINGS OF DIFFERENTIATION BETWEEN LOCALS AND NON-LOCALS *Sometimes patients criticise us because I wear a hijab [head scarf], not very often but in the last 2 1/2 to 3 years at least 3 or 4 times it happened. Twice patients were involved and two times the general public. I mean they ask why do you cover up like this? What have you made of yourself [by wearing head scarf]?* (Physician leaver-5)

Furthermore, the study results identified the problems faced by Pakistani physicians during the process of resettlement in Pakistan, which addressed the fourth aim of the larger study. These problems were mainly health system problems, such as an unwelcoming attitude on the part of hospital management both in the public and private sectors, difficulty in finding suitable jobs and the availability of underpaid jobs. Furthermore, the increasing personal insecurity and societal degradation was also identified as potential problems that discourage Pakistani physicians from resettling (Table 4).

DISCUSSION

Three significant findings emerged from the data analysis. First, the study shows the dynamic nature of the physicians' career decision-making which depends on the constant weighing of complex personal, family, professional and societal factors. Second, those physicians who decided to stay in Pakistan or resettled back into Pakistan did so because of their personal and family reasons or because of societal factors. Health system factors played a minimal role in the decisions of these physicians, except for the availability of permanent jobs. The third major finding that emerged from the study is that the factors affecting Pakistani physicians' decisions to move overseas or barring those from coming back into their country after training or working abroad for some time are mostly health system problems with the addition of another societal problem of personal insecurity and general societal degradation. However, as stated in the introduction section of this paper, only the first major finding which addresses the overall purpose of this study is discussed. Other findings that address the four specific aims will be presented in subsequent publications.

THE DYNAMIC NATURE OF PHYSICIANS' CAREER DECISION-MAKING

From the findings of this study, it is clear that physician migration, retention and re-settlement is a complex issue and there are different social, political and economic factors that affect their decisions of moving abroad, re-settling back or staying in their country.

TABLE 4: PROBLEMS ENCOUNTERED BY PAKISTANI PHYSICIANS DURING THE PROCESS OF RESETTLEMENT BACK INTO THEIR COUNTRY AFTER WORKING ABROAD FOR SOME TIME

CATEGORY	FACTOR
PERSONAL CHARACTERISTICS & FAMILY FACTORS	NO FACTOR WAS IDENTIFIED IN THIS CATEGORY BY THE PARTICIPANTS
HEALTH SYSTEM FACTORS	UNWELCOMING ATTITUDE *... if someone new is going out to learn something and then come back, then that can benefit their people. But the main thing is that they should be treated in a proper way when they return ... I mean the main reason is that the government do not utilise their people properly.* (Physician stayer-4) DIFFICULTY IN FINDING SUITABLE JOBS *In the beginning, the reasons were that the FCPS [Fellowship of the College of Physicians and Surgeons, Pakistan] was new at that time and I applied there, but for six months I did not receive any reply. The application was laying there and then our professor of psychiatry in Lahore said to me why don't you go abroad instead of waiting here ... Then I applied in England and I went there for postgraduation. Then, after that on returning back I could not find any suitable job.* (Physician leaver-4) UNDERPAID JOBS *I worked for three months but there [private hospital] it was too much of a one-man show. And then I left that. And these are very under-paid jobs. That was 1998-99 and they were giving me 42,000 rupees at that level. You should pay a good salary to a doctor who has done so much. Pay him to such an extent that he remains satisfied with his job and work. So that was a very under-paid job.* (Physician resettler-3)
SOCIETAL FACTORS	PERSONAL INSECURITY AND SOCIETAL DEGRADATION *... I had never ever liked societies not merit based and my biggest problem in Pakistan as a doctor or as an individual was that there was no merit, no recognition of merit. There was no justice and things are going from bad to worse rather than improving, they are deteriorating.* (Physician leaver-1)

The first major conclusion from this study which addresses the overall purpose of this study suggests that the three groups of respondents, stayers, leavers and resettlers, interviewed for this study are not static and mutually exclusive entities. During the course of their career journeys these physicians continuously evaluated their personal, professional and social circumstances and made their career decisions based on these different conditions.

Based on these multiple and complex factors, those physicians that are happy with their life, work and family balance stay, while those that are unhappy with the balance and have different priorities, move abroad. Likewise, those who go overseas and achieve their predominantly professional goals, such as postgraduate training or increased monetary benefits, tend to stay overseas. In the meantime, if their priorities change, such as their perceived better quality of life in their home country as compared to overseas, then they resettle back into their country of origin. Similarly, those physicians who resettle back into their country can leave again depending on their analysis of the available conditions in their home country. Therefore, based on this constant weighing up of these multiple circumstances a stayer physician can become a leaver and a leaver can become a resettler and, depending on the prevailing conditions, even a resettler physician can become a leaver again.

This finding about Pakistani physicians' evaluation of multiple personal, family, professional and societal factors during their career decisions has similarities with decision-making behavioural models proposed by Wolpert et al. [25] and Tolhurst [26] 'Landscape of Fulfilment' model. According to behavioural models, migration decisions are a sort of individual cost-benefit analysis that not only includes economic factors but other non-economic societal factors such as security and self-fulfilment. [25] According to this model, a person will only migrate if his/her values and expectations are met at the destination.

Similarly, according to the Tolhurst's of 'Landscape of Fulfilment' model, individual doctors seek the balance between the notion of the 'self' that encompasses their internal inspirations and values with the other domains that relate to aspects of life and work. [26] Therefore, this model argues that, based on this balance between self, life and work expectations, doctors make decisions about staying or leaving their practice locations.

While Abdullah et al. [27] critically reviewed human resources for health as a crisis for Pakistan, the solutions rely on the importance of understand the interplay of recruitment, retention and migration. Our qualitative paper explores the lived experience of Pakistani physicians as they change from stayers, leavers and resettlers and outlines that decision making is dynamic with the weighing of personal and family factors, societal and environmental factors. The findings of Sheikh et al. [5] in a qualitative study of Pakistani doctors who were early migrators found similar factors at play. These factors are not isolated to doctors alone, but also extend to primary health care workers in Pakistan. [28] Other recent quantitative studies have found personal and family, and societal and environmental issues important for career decision making for both medical students [29] and doctors in Pakistan. [18]

The findings of this study have important implications for policy and practice in relation to health human resource development generally and the medical workforce particularly in Pakistan and also other similar developing countries. It is important to note that Pakistan is not the only country facing problems with health human resource recruitment, retention and migration. Globally, countries in both the developed and the developing world are struggling with efficient and effective use of its human resources for health. [1-4] Therefore, the issues raised in this study, which can be viewed as a case study of Pakistani physicians, may be generalisable to doctors from other countries. This is supported by the importance of identity, belonging and place emphasised both in our findings relating to Pakistani physicians and by Tolhurst [26] who studied Australian medical students and female physicians.

While this study focuses on Pakistani doctors, its findings has relevance to health care managers internationally because Pakistani physicians make a major proportion of migrant physicians working in the United States, the United Kingdom, Canada and Australia. [14] Therefore, health managers in recipient countries should consider issues which have made their new doctors leave their country of origin to assist in their transition and retention in a new country.

Alternatively, health managers in developed countries, who are major recipients of Pakistani and other similar developing countries doctors, may develop bilateral agreements for developing professional training programs for these migrating physicians on the condition of return. It will help these migrating physicians by increasing their earnings and also by getting trained by working for some years in an advanced healthcare system under supervision. On the other hand, the recipient countries will get much needed healthcare workers that will provide healthcare to their people. Therefore, such agreements could be beneficial for both the source and the recipient country.

CONCLUSION

Physician migration, retention and resettlement is a complex issue and there are multiple personal, social, political and economic factors that affect their decisions to stay, move abroad or resettle back into their countries. Therefore, it is recommended that future research focusing on health workers retention, migration and resettlement issues examine it from a holistic perspective rather than focusing only on the economic and professional imperatives.

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