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المجلة الصحية لشرق المتوسط

هى المجلة الرسمية التى تصدر عن المكتب الإقليمى لشرق المتوسط بمنظمة الصحة العالمية. وهى منبر لتقديم السياسات والمبادرات الجديدة في الصحة العامة والخدمات الصحية والترويج لها، ولتبادل الآراء والمفاهيم والمعطيات الوبائية ونتائج الأبحاث وغير ذلك من المعلومات، وخاصة ما يتعلق منها بإقليم شرق المتوسط. وهى موجهة إلى كل أعضاء المهن الصحية، والكليات الطبية وسائر المعاهد التعليمية، وكذا المنظمات غير الحكومية المعنية، والمراكز المتعاونة مع منظمة الصحة العالمية والأفراد المهتمين بالصحة فى الإقليم وخارجه.

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The need for research evidence to meet health workforce challenges in the Eastern Mediterranean Region

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The countries of the World Health Organization (WHO) Eastern Mediterranean Region signed the UHC2030 Global Compact collectively at the Ministerial Meeting on the Road to Universal Health Coverage (UHC) in Salalah, Oman, 3–5 September, 2018 (*1*). In the Compact, they expressed their commitment to working together with renewed urgency to accelerate progress towards UHC, through building and expanding equitable, resilient and sustainable health systems. Universal Health Coverage is the overarching target for achieving the Sustainable Development Goals (SDGs) especially the Goal 3 of Health and Wellbeing, and is the key objective of WHO's general programme of work for the next five years (*2*).

Health workforce has a fundamental role in enabling progress towards UHC. There is a growing recognition that the demand for health services generated by population growth and ageing is placing an increased emphasis on how countries train, recruit, deploy, retain and manage their health workforce. This has led to an unprecedented and highly welcome focus on health workforce policy, planning, production and their deployment and continued development. This focus plays out at all levels from global to local and recognizes the interconnectedness between the different levels, and the need to ensure aligned policy responses to health workforce challenges.

At a global level, the necessary and appropriate policy responses are well described in the WHO Global Strategy on Human Resources for Health: Workforce 2030 adopted by the Sixty-ninth World Health Assembly in 2016 (*3*). This strategy has lent itself to the development of regionally specific frameworks, including in the Eastern Mediterranean Region (EMR) (*4*).

In 2006, the World Health Report drew attention to a global shortage of health workers and identified 57 countries out of 192 that reported having less than 23 physicians, nurses and midwives in 10 000 population. This was a threshold below which 80% of basic maternal and child health services could not be provided. Of these 57 countries, seven were EMR Member States (*5*); more than a decade later, the health workforce situation is still critical in these seven countries. When considering the more ambitious targets of SDGs and increased threshold levels, studies and projections supporting the recent Global Health Workforce Strategy have estimated a shortage of 17 million health workers globally, of which almost 2.6 million are doctors, 9 million are nurses and midwives, and the remainder represent all other cadres (*2*). Current trends of production and employment will not have a sufficient impact on reducing the needs-based shortage of healthcare workers, which is projected to remain at more than 14 million globally by 2030 (*2*).

In the EMR there are also geographical, skill-mix and gender imbalances in the health workforce. Health workforce mobility is increasing among countries within as well as out of the Region, with some countries remaining highly reliant on expatriate staff, while others are depleted of their health professionals due to emigration. Competition from the private sector and dual practice also lead to shortages and high workloads in the public sector in many EMR countries. Despite the magnitude of dual practice among physicians in the Region, empirical studies are limited (*6*), and potential solutions are difficult to design and implement (*7*). There are also concerns in relation to the quality and productivity of health workers (*3*). Almost half of EMR countries are affected by emergencies and conflict, which exacerbate shortages, lack of security, mobility and availability of health workers; 86% of health workers killed or injured globally during 2014–2015 were from the Eastern Mediterranean Region (*8*).

In response to these challenges, the WHO Regional Office for the Eastern Mediterranean developed a Framework for Action for Health Workforce Development, endorsed by the Regional Committee in 2017, to accelerate action for addressing health workforce challenges towards achieving UHC and the SDGs (*3*). The Framework for Action calls for Member States to develop comprehensive health workforce strategic plans based on a valid understanding of health labour market dynamics, mobilize investment for health workforce development, strengthen governance and regulatory capacities, and improve health workforce information and evidence. The Framework proposes strategies to ensure the availability

of a fit-for-purpose, motivated and responsive health workforce accessible to all people of the Region (*4*). The Framework insists that the first step is to utilize more effectively the current workforce through continuous development and retraining, changes in skill-mix and scope of practice, and redeployment.

This special issue of the Eastern Mediterranean Health Journal presents in three sections examples of original analysis and the application of analytical tools and applied research to inform policy and enhance implementation. This is also in line with a developing regional strategy for enhancing production of regionally relevant research evidence and improving evidence informed decision-making (*9-11*). The first section presents examples of research to improve our understanding of aspects of health workforce behaviour, choice, allocation and impact. These research articles report on the extent of dual practice, workforce planning and the use of a workload estimation tools to support primary care workforce planning, the pattern of nursing research activity in the Region, public health education, and factors related to location choice and to retention of medical doctors. These papers clearly show that there is a broad range of appropriate research methods which can be utilised to inform and support improvements in health workforce policy and planning, locally and nationally.

The second section presents short reports on health professional capacity building, including inter-professional education, competency based curriculum development, field epidemiology training, an assessment of pharmacy workforce development opportunities, the development of a national competency-based curriculum for technical nurses, and capacity building in "health diplomacy".

The final section presents three reviews on addressing health workforce shortages and maldistribution, and transformation of nursing education. Overall, this thematic issue provides additional analysis and evidence relevant to the Region. It can assist policy-makers and inspire other researchers and policy analysts to contribute further to improving and extending our knowledge of how best to address health workforce challenges. Meanwhile, the WHO Regional Office for the Eastern Mediterranean is committed to helping Member States scale up their health workforce capabilities in the quest for accelerated progress towards Universal Health Coverage.

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Public health education and health system needs in Pakistan: a mixed methods study

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Abstract

Background: Pakistan has recently observed a significant growth in public health education programmes. Little is known about the structure of these programmes nor whether they are adequately responsive to national health system needs.

Aims: We reviewed existing public health degree programmes in Pakistan along with an exploration of the national public health market and health system needs.

Methods: A mixed-methods study was conducted between January 2015 and March 2016. Seventeen public health degree programmes were reviewed for programmatic and instructional attributes. Thirteen key-informant interviews were conducted to explore health system needs and challenges related to public health workforce.

Results: We found substantial variation in public health academic programmes in terms of offered courses, credit hours, number of faculty and tuition costs. About 70% of public health degree programmes were generic (i.e. with no specific concentration track) and only 18% offered practicums. Overall median tuition cost in 2016 was US$ 10 350. During key-informant interviews, emerged themes for challenges included lack of practical public health skills, limited knowledge of latest theoretical principles, poor communication skills and insufficient IT orientation. Identified themes about knowledge and skills areas to address future public health challenges of Pakistan included system thinking mind set, healthcare IT skills, and leadership and management skills.

Conclusions: Public health education in Pakistan falls short of meeting current national challenges. Pakistan needs a national public health accreditation body for regulating education, harmonizing global standards to local context and developing relevant career pathways.

Keywords: public health, education, health system needs, Pakistan

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Introduction

The World Health Organization has estimated a worldwide shortage of 17.4 million health care workers, with substantial disparities among and within regions (*1*). To fill this gap, the development of a competent health workforce will have to be aligned with relevant population needs. In Pakistan, although public health education has seen significant growth in last decade (*2*). Up to 2005, six institutes were offering public health degree programmes but in the last decade there has been a threefold increase in public health degree-awarding institutes. Part of this growth can be attributed to the repeated natural disasters that the country saw during this period (2005–2017), generating the need for public health professionals (*3,4*). In the aftermath of the 2005 earthquake, which killed almost 100 000 people and affected 5 million families, the rehabilitation activities funded by international donor agencies resulted in an associated increase in demand for public health professionals. In 2010, major floods affected over 20 million people in Pakistan, with estimates of damage exceeding US$ 40 billion (*5*). Frequent movements of Afghan refugees across the north-western borders of Pakistan and ongoing internal displacements due to the insecurity conditions significantly add to existing challenges of public health professionals (*6*).

In addition to environmental disasters and violence, Pakistan has public health challenges linked to its demographic and epidemiological landscape. The sixth most populous country in the world, Pakistan is a lower middle-income country with an adult literacy rate of 57% and a higher proportion of younger population (33.8% aged 0–14 years) (*7,8*). It has a significant burden of communicable (38%) and noncommunicable diseases (51%) (*7*). Pakistan is one of the very few countries left in the world with endemic polio. With this background, it is imperative to assess whether existing public health education in Pakistan fulfils health system needs.

So far, little is known about the overall structure, curricula, courses offered or assessment policies of Pakistan's public health degree programmes. It is not known whether the curricula offered are competency-based or appropriately responsive to national public health challenges. In this study, we reviewed existing national public health degree programmes followed by an exploration of national public health and health system needs. This is the first study that reports an overview

of public health-related graduate degree programmes and skill sets expected of a public health professional in Pakistan.

Methods

Design

This mixed methods study was conducted in two phases: phase I involved a review of public health degree programmes being offered; in phase II, key informant interviews were conducted with public health experts.

Academic programmes review

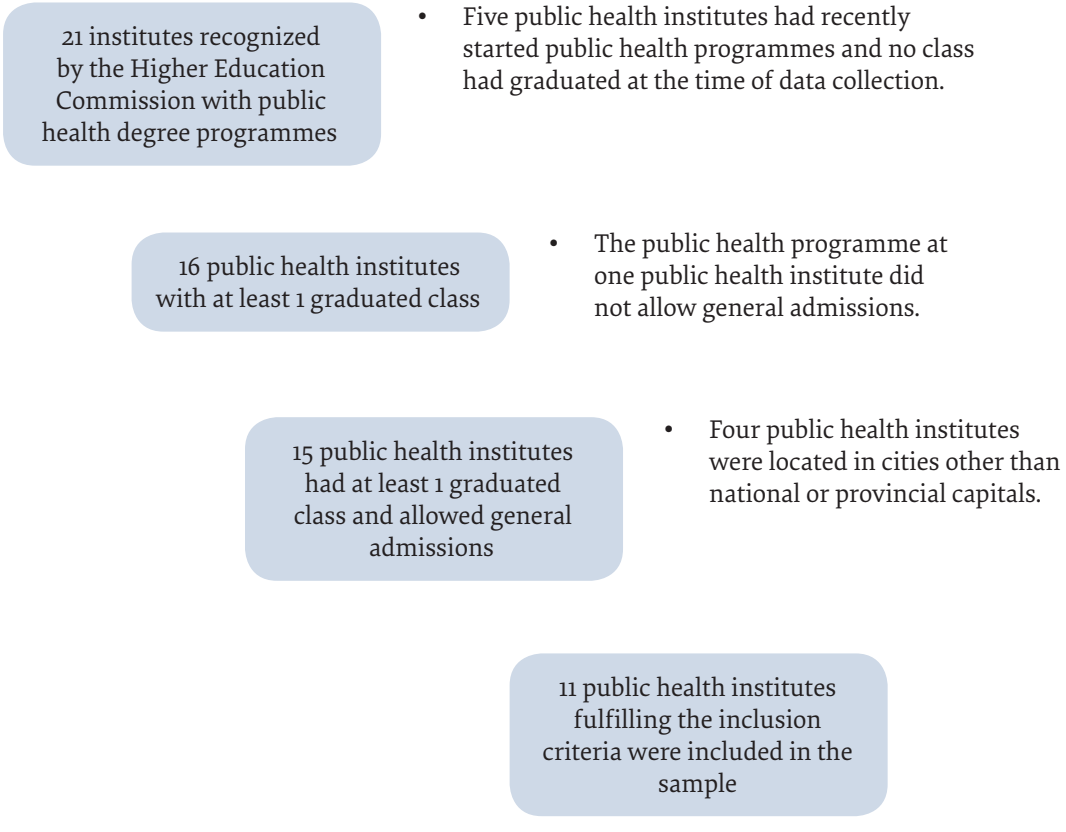
The academic programmes review gathered information about course composition and content, student admission criteria, faculty (both full-time and part-time), accreditation status and programme finances. As of January 2015, there were 21 degree-awarding institutes/universities offering public health degree programmes recognized by the Higher Education Commission in Pakistan; 81% of these are located in five major cities, Islamabad, Karachi, Lahore, Peshawar and Quetta. In our survey, we included public health degree programmes that had at least one class graduated from the programme and where admissions were open to the general public (as opposed to only military personnel or public sector employees), and those located in one of the five major cities. Programmes were broadly grouped into two types: general Master of Public Health (MPH)/Master of Science in Public Health (MSPH) programmes (i.e. with no specific concentration track) and specialized MPH/MS (Master of Science) programmes (i.e. with a specific concentration track such as MS in epidemiology and biostatistics). The sampling flowchart is given in Figure 1.

A pilot-tested, structured questionnaire was administered during January–June 2015 through a face-to-face meeting with the programme coordinators of the institutes retained for study offering public health degree programmes. All meetings were conducted by the same person (one of the authors). The questionnaire included items related to academic programme specifics like degree requirements, admission, accreditation and recognition status, courses and credit hours, faculty and fee structure. Where applicable, the institute websites, prospectuses and student handbooks were reviewed to obtain the required information before meeting programme coordinators. The meeting then helped in providing the missing information, updating certain information relating to the prospectus, website or handbook, and/or verifying the programme information already collected.

Key informant interviews

Expert key informants were purposely selected based on their affiliations with public health organizations, reputation and experience using a snowball sampling technique (original key informants were asked to suggest additional experts for interviews). Once three consecutive interviews failed to yield any new thematic information,

Figure 1 Sampling flow chart for surveyed public health institutes



the interviews were stopped.

We conducted 13 key informant interviews with experts from national and international organizations working in Pakistan's public health field using pilot-tested semi-structured guides with open-ended questions. All interviews were conducted by three of the authors (MZ, UA and SA) from August 2015 through March 2016 in Karachi, Islamabad, Lahore and Peshawar. The key informant interviews helped identify experts' perspectives about public health competencies required of a public health professional in Pakistan. Interviews focused on public health professional's knowledge and skill set gap and areas needing improvement to meet national public health challenges.

Compliance with ethical standards

Ethical approval for the study was obtained from the institutional review board of Prime Foundation (Peshawar, Pakistan). Participation in both the qualitative and quantitative phases of the study was anonymous and voluntary, and informed consent were obtained from all participants.

Statistical analyses

Descriptive statistics were computed to characterize the participating programmes and experts. The programme characteristics for general and specialized public health master's degrees were compared using the Mann–Whitney U test (for continuous data) and 2-sample proportion tests (for categorical data) using SPSS, version 21. For the key informant in-depth interviews, expected themes were identified before data coding. Field notes were then closely reviewed to inductively advance the development of the codes. Coding identified broad themes for each of the main areas of inquiry (*9*). Median and ranges for programme tuition costs were derived and converted to US$ (2016) after adjusting for purchasing power parity. We used the most recent available 2016 Pakistan figure for purchasing power parity conversion factor for gross domestic product (*10*).

Results

Programme characteristics

Eleven out of the 21 degree-awarding institutes recognized by the Higher Education Commission that offer public health degree programmes met the inclusion criteria, offering 17 public health degree programmes (12 general MPH/MSPH, five specialized public health programmes).

Programme characteristics comparing general and specialized MS programmes are shown in Table 1. Ten of the 17 public health academic programmes (59%) were established in the past decade (2006–2015). The overall median age of the programmes we reviewed was 7 (interquartile range = 8) years. Twelve of the 17 MPH/MSPH degree programmes were generic (offering no specific concentration track) with median total credit hours of 60. Two MPH/MSPH programmes and one specialized public health MS programme offered practicums. Since most programmes (9/17) did not have detailed course information on their content, mode of delivery or assessments, the comparisons based on these variables are not reported. There was a great difference in numbers of academic faculty among institutes. For

Table 1 Summary of characteristics of surveyed academic programmes in public health in five cities in Pakistan, 2015

Master's programme characteristics	Overall (*n* = 17)	Type of degree programme	
		MPH/MSPH general (*n* = 12)	MPH/MS specialized (*n* = 5)
Public vs. private ownership (Public) [No., (%)]	7 (41)	5 (42)	2 (40)
Age of programme (years) [median (range)]	7 (4–23)	6 (4–23)	13 (5–19)
Programme started after 2005[a] [No. (%)]	10 (59)	8 (67)	2 (40)
Recognized by Pakistan Medical and Dental Council, [No. (%)]	13 (77)	8 (67)	5 (100)
Programme structure			
Total credit hours [median (range)][b]	60 (46–72)	60 (46–72)	61 (46–72)
Research dissertation credit hours [median (range)][c]	8 (6–24)	6 (6–13)	12 (4–24)
Practicum/internships required [No. (%)] (n = 12)	1 (8)	1 (10)	0 (0)
Faculty size[d] [median (range)]	17 (5–39)	11 (5–39)	28 (17–39)
Full–time faculty [median (range)]	7 (0–20)	5 (0–20)	20 (4–20)
Visiting faculty [median (range)]	9 (0–19)	8 (0–19)	10 (8–19)
Tuition cost[e] (2016 PPP US$) [median (range)]	10 350 (2008–61 001)	8396 (5 141–15 182)	15 182 (2008–61 001)

MPH = Master of Public Health; MSPH = Master of Science in Public Health; MS = Master of Science.

[a] *The cut-off year indicates the devastating 2005 Pakistan earthquake potentially creating a demand for public health practitioners.*

[b] *One programme provided details in teaching hours instead of credit hours and is not included.*

[c] *$P < 0.05$ using Mann-Whitney U test; the differences for other variables were not significant at $P = 0.05$.*

[d] *Faculty size information for one public sector institute is not reported here since it was an outlier (70 full-time faculty members and no visiting faculty).*

[e] *Tuition costs were calculated in international dollars using Pakistan's purchasing power parity (PPP) conversion factor for gross domestic product of 29.18 (10).*

instance, number of faculty members in the surveyed institutes (including both full-time and part-time) ranged from 5–39. One public sector institute was treated as an outlier as it reported 70 faculty members being regularly involved in academic activities in their public health programme.

Institutes with MPH/MSPH degree programmes were offering courses that varied considerably in topics, types of offering (core versus elective) and credit hours. Commonly offered courses in MPH/MSPH programmes were epidemiology, biostatistics, communicable disease control, health education/promotion, health management/health administration and accounting, occupational/environmental health, and reproductive health with a research dissertation as a requirement for the degree.

Overall, median tuition cost of the specialized MPH/MS degree programmes was US$ 15 182, which was higher than that of the general (i.e. with no specialization) 2-year MPH/MSPH degree programmes (US$ 8369). The variation in total tuition costs for general MPH/MSPH degree programmes was great, ranging from US$ 5141 to US$ 15 182. The range was even higher (US$ 2018–61 001) for specialized MS level public health degree programmes (e.g. MS in epidemiology and biostatistics, MS in health management and economics, and MPH in community eye health).

Key informant interviews: thematic findings

Key informants (N = 13) were public health experts representing international and national nongovernmental organizations, public sector health departments and academic institutions based in Pakistan. Average professional experience and affiliations for the key informants are given in Table 2. The minimum level of experience was 8.0 (standard deviation 2.8) years. The themes identified for each of the three areas of inquiry are given below. Table 3 shows the themes along with representative comments from key informants.

Area of inquiry 1: Currently used knowledge and skill set in Pakistan's public health organizations

The key informants' responses were grouped into one knowledge (basic public health science) and three skill set themes (communication, management and analytic skills) as follows:

- **Basic public health science (knowledge):** All key informants mentioned the routine use of basic science knowledge (and associated skills). They indicated that the spectrum of knowledge (and associated skills) a public health practitioner deals with in Pakistan is broad and includes maternal and child health, nutrition, communicable diseases, disasters and emergency management, health systems, health care financial management, policy and strategy development.
- **Communication and writing skills:** Key informants identified report writing, public speaking, interpersonal communication, and negotiation skills as the most commonly employed skills. Ability to draft memoranda of understanding was also identified as a commonly performed activity by two participants, both belonging to public sector organizations. Proficiency in English and one local language was noted as a key skill for public health professionals. Other skills mentioned included leadership, advocacy, social mobilization, team work and conflict resolution.
- **Health management skills:** The majority of key informants argued that while basic principles and practice of management stay the same, it is the unique local health context in which these skills are used that makes them important. One interviewee commented that "our immunization-related field workers have mostly got basic nonmedical qualifications. And with increasing distrust among communities regarding immunization, managing this human resource poses additional managerial challenges". The management skills that were stressed the most were event management, project management, coordination and problem solving, quality assurance and management, monitoring and evaluation, human resource management, procurement, logistics, and supply management.
- **Analytical skills:** Frequent use of basic research skills (information gathering and literature review, development of data collection tools, data collection and analysis), ability to use data analysis software packages (MS Excel, EpiInfo, SPSS) and developing indicators and targets for project frameworks were identified as routine public health tasks.

Area of inquiry 2: Knowledge and skill sets that are usually lacking in the current fresh public health graduates in Pakistan

The four identified themes related to second main inquiry were:

- **Lack of practical public health skills:** All key informants singled out the absence of important public health practical skills as the most frequent observation among fresh public health graduates. One interviewee from an international nongovernmental organization noted that "almost always we end up giving the practical skills from scratch".
- **Poor communication skills:** Most (11/13) key informants identified communication skills (report and grant writing, verbal presentation skills, interpersonal communications, and capacity building/teaching skills) as a major shortcoming. One participant noted that "in Pakistan, when you are working in the field for promotion of vaccination or family planning, good interpersonal communication skills are vital. That's why we cannot afford someone with poor communication skills". Limited technical writing skills among fresh graduates were highlighted. One participant suggested that during training the "evaluation of MPH graduate[s] should be on the basis of

Table 2 Affiliations and experience of public health expert key informants (n = 13), 2015–2016

Affiliation	Key informants		Experience in public health field (years)	
	No.	%	Mean	SD
International nongovernmental organizations, including key informant experts from WHO, UNICEF, GIZ, TRF (a project of DFID and DFAT), and Marie Stopes Society	5	38.5	19.0	10.2
National nongovernmental organizations, including key informant experts from Interactive Research and Development, Association of Community Development and Aman Foundation	3	23.1	13.3	12.7
Public sector health departments, including key informant experts from Health Sector Reforms Unit, National TB Control Programme and Provincial Health Department	2	15.4	8.0	2.8
Academic institutions, including public health experts from 2 major national medical universities	3	23.1	19.0	10.5

SD = standard deviation.
WHO = World Health Organization.
UNICEF = United Nations Children's Fund.
GIZ = Deutsche Gesellschaft für Internationale Zusammenarbeit (German Federal Enterprise for International Cooperation).
TRF = technical resource facility.
DFID = Department for International Development, United Kingdom.
DFAT = Department of Foreign Affairs and Trade, Australia.
TB = tuberculosis.

assignments that check critical thinking in addition to writing skills," and that given the current state of fresh graduates, "it doesn't seem like it's being done".

- **Limited knowledge of latest theoretical principles:** key informants noted that considerable progress has been made recently in public health but fresh graduates have little knowledge about the latest trends. One participant noted that few graduates would know about evidence-based interventions for improving maternal and child nutrition. Fresh graduates had limited theoretical knowledge in most public health areas. Nine of the 13 participants stated that, for a master's level graduate, having an understanding of the basic underpinnings of public health and the latest related developments is important. One participant noted that "if you are trained in Pakistan, I would like you to know at least the basics of communicable disease control, and epidemics investigation". Another interviewee indicated that the public health graduates "have limited knowhow of the existing health policies at the provincial or even national level' and that they 'are not aware of the local public health infrastructure".
- **Insufficient information technology (IT) orientation:** Six key informants pointed out that fresh graduates have limited skills with Microsoft Office applications and statistical packages (e.g. EpiInfo, SPSS). One participant from the health department stated, "forget about a hi-fi data software, the graduates don't know the basic [MS] Excel [functions]".

Area of inquiry 3: Knowledge and skill sets that will become increasingly relevant

- **Knowledge and skill areas for addressing future public health challenges in Pakistan:** Key informants mentioned multiple areas that in the future will become increasingly relevant in Pakistan's public health context. These were grouped into three themes related to health systems, health care IT, and leadership and management.
- **Skills to improve health system with system-thinking mind set:** The most prominent emerging theme was skills related to health system improvement and system thinking. According to key informants, the future entails a system-thinking mind set, evidence-based decision-making, alignment of local/national priorities to international frameworks, quality enhancement programmes, innovative and effective capacity-building of the workforce, implementation of well drafted contractual agreements, and careful integration of vertical programmes. They argued for early exposure in public health training to these concepts and skills. Key informants stressed that capacity-building in the workforce and the community will take "the centre stage" of a typical public health professional's job in future. One participant commented that "capacity-building should be taught as a science as we are entering in an era where community education will be revolutionized. In future, new effective methods of capacity building will become prevalent".
- **Health care IT skills:** Most (10/13) key informants recognized the importance of a general understanding of health care IT principles for future public health graduates. They indicated that the trend for IT-based operations is growing in Pakistan with focus on eHealth/m-health, health care geographic information system, district health information system, web-based monitoring and evaluation, and a management information system for human resources, logistics, and procurement. One participant, noted that "there is a strong (international donors') push to-

Table 3 Themes and representative comments from the public health expert key informants (n = 13) for the three areas of inquiry, 2015–16

Theme	Representative comments
Area of inquiry 1: Knowledge and skill sets frequently used in surveyed public health organizations	
Basic public health science (knowledge) and associated skills	"With frequent epidemics in KP [i.e. in this region], our team is routinely involved in epidemics investigation." "Our organization leads the efforts to deal with nutritional and MNCH related emergencies which are quite frequent in our disaster-prone province." "Here [in our organization], the quality assurance and monitoring and evaluation functions are taken very seriously and are frequent."
Communication and writing skills	"Writing – be it proposal writing or just a simple report – is the single most important activity done in our organization." "To be successful here [in our organization], you must be a people person with good interpersonal skills and an ability to work in diverse communities."
Analytic skills	"Literature review, or information gathering in general, is a frequent task assigned to our employees."
Health management skills	"Management of the community staff in the field is something we do on daily basis." "Our immunization-related field workers have most often got basic nonmedical qualifications. With increasing distrust among communities regarding immunization, managing this human resource poses additional challenges."
Area of inquiry 2: Knowledge and skill sets that the fresh graduates most commonly lack	
Lack of practical public health skills	"Most of them [the existing public health graduates in Pakistan] are lecture-based trainees and have no hands on experience." "Almost always we end up giving the practical skills from scratch."
Deficient theoretical knowledge	"If you are trained in Pakistan, I would like you to know at least the basics of communicable disease control, and epidemics investigation." "In my opinion, the graduates have limited knowhow of the existing health policies at the provincial or even national level." "Our [locally trained] graduates are not aware of the local public health infrastructure."
Communication-related skills	"In Pakistan, when you are working in the field for promotion of vaccination or family planning, good interpersonal communication skills are vital. That's why we cannot afford someone with poor communication skills." "Evaluation of MPH graduates should be on the basis of assignments that check critical thinking in addition to writing skills. It doesn't seem like it's being done"
Limited information technology orientation	"Forget about a hi fi [sic] data [management] software, the graduates don't know the basic [MS] Excel [functions]."
Area of inquiry 3: Knowledge and skill sets that will get increasingly relevant in near future	
Health system strengthening with system thinking mind set	"Skills related to drafting and implementing contracts will become important in future. Government will have to make contractual agreements with private sector partners [for health care delivery], we [public sector] just can't do it all." "Skills required for leading change in a constantly evolving [Pakistan's] health system are desperately required of public health professionals."
Health care information technology	"There is a strong [international donors'] push towards transparency and accountability; and to ensure efficient documentation and reporting information technology's role will grow."
Leadership and management skills	"With the state of law and order, and community distrust we have in Pakistan, cultural competence becomes even more important." "We will need growing number of experts that can lead response teams for health related emergencies."

KP = Khyber Pakhtunkhwa.
MNCH = maternal, neonatal and child health.
MPH = Master of Public Health.

wards transparency and accountability, and to ensure efficient documentation and reporting, information technology's role will grow".

- **Leadership and management skills:** Almost all key informants emphasized the importance of leadership and management skills. One participant noted that "skills required for leading change in a constantly evolving health system are desperately required of public health professionals". Interviewees urged that future public health professionals require mastery in cultural competence, negotiation, and conflict avoidance and resolution skills. Interviewees also stressed team work, diversity and inclusiveness.

Discussion

Based on surveyed programmes and key informant interviews, we found important gaps in public health education and practice. One major finding was the lack of

adequate practical exposure during training. Only two MPH/MSPH degree programmes had formal practicums/internships. In lieu of practicums/internships, most programmes offered 5–7 single-day public health field visits. Studies from India, Nepal and South Africa have reported similar trends related to inadequate practical exposure during public health training (*11–13*). Without adequate practical exposure during training, students are vulnerable to developing an inability to apply classroom knowledge to real world problems. Studies show that practicums and internships allow students to exercise the learned competencies on actual public health challenges and to develop lasting professional networks (*14–16*). Above all, providing in-training experiential exposure helps students focus on the outcomes of their education in terms of developing relevant competencies (*17*).

Like in other countries in the Region (*2,18,19*), our study found a greater number of general public health master's programmes as opposed to specialized ones. This is understandable since most of the programmes are relatively young (median age 7 years), and we expect that the trend towards specialization will increase with time. One of the major themes from interviews was a mismatch between the content of public health academic programmes and the current health system needs. Programmes for which detailed curricula were available mostly had traditional as opposed to competency-based curricula. Thus, public health education is provided largely as an abstract science as opposed to a pragmatically-rooted discipline that is tuned to address real-world needs. Current recommendations insist on following a competency-based approach starting with "backward planning" that first specifies local health issues. Once the most pertinent problems are identified, desired competencies and well defined learning outcomes are developed and integrated into the curriculum to address those predetermined community needs (*20–23*). The authors therefore recommend that public health academic programmes in Pakistan be restructured to achieve greater alignment with evolving community and health system needs. Similarly, an outcome-oriented, competency-based curriculum should be developed providing skills-based professional education that the community, the health system and employers are looking for (*21*).

Published studies have attributed the mismatch between community needs and health care workers' competencies to fragmentary, rigid, and outdated curricula, professional "tribalism" and lack of interdependence, outdated pedagogy, and limited responsiveness to local needs (*1,24–27*). A recent report advocated a series of instructional and institutional reforms to address the challenges related to health care coverage, cost, quality and workforce (*20*). Our study proposes similar recommendations. Adopting a competency-based curriculum using real-world locally relevant case studies, giving practical exposure to students during training, and optimizing the weighting of covered content according to system needs are a few of the instructional reforms that will help develop a systems-based, responsive, competent public health workforce.

In Pakistan, gaps pertaining to structured, standardized and need-based public health education largely exist due to lack of a specific public health accreditation body. Currently, the Higher Education Commission serves as an overarching accreditation body for any type of graduate and postgraduate education. Institutes involved in medical and dental training must also be recognized by the Pakistan Medical and Dental Council. The accreditation of public health degrees from the Pakistan Medical and Dental Council (in addition to the Higher Education Commission) is only required for medical and dental graduates if they intend to take an academic position at a medical or dental school. Thus, at present a single professional body for uniform accreditation of public health programmes does not exist in Pakistan. Without an external legal regulatory framework encompassing all types of public health education (for both medical and nonmedical graduates), institutes will have little incentive to implement competency-based curricula addressing Pakistan's public health challenges. A public health academic accreditation body can enforce the use of competency-based curricula with practicum and/or internships (*28*). The authors believe that a national public health accreditation body is urgently needed to perform: assessment of national public health needs; development of nationally relevant, public health competencies; regulation of the adoption of public health competencies; and accreditation of public health programmes. It is worth mentioning that one of the milestones set by WHO's global strategy on human resources for health is that "all countries will have established accreditation mechanisms for health training institutions by 2020" (*1*).

This study had limitations. First, we were unable to compare the contents, delivery and assessment of courses across different programmes due to the unavailability of detailed course and dissertation information. However, this points to a lack of well-defined and standards-based educational programmes. An in-depth study on identifying differences in content, delivery and assessment among similarly labelled courses would be an interesting, albeit practically challenging, question to pursue. Second, although we attempted to include a wide range of public health experts as key informants, they did not represent every niche of the public health profession, and thus the identified challenges are limited to their experience. Third, our programme review was limited to five major cities for reasons of feasibility. Although these five cities contain the majority (81%) of public health institutes, the findings of the programme review may not be generalized across all institutes. Finally, the authors did not intend to present an exhaustive list of knowledge and skill sets for a public health degree programme,

only to demonstrate the existence of significant gaps in public health education. These can however, be used as a starting point for the development of a competency-based curriculum in Pakistan.

Conclusion

This study identifies key gap areas in public health education, and suggests establishing a grounded, evidence-based curriculum for quality public health education in Pakistan. Public health institutes should implement a competency-based approach addressing system needs. A national public health accreditation body is needed which, apart from regulating public health education, harmonizes existing relevant public health standards to local context, and develops public health career pathways.

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Enseignement en santé publique et besoins du système de santé au Pakistan : étude à méthodologie mixte

Résumé

Contexte : Le Pakistan connaît depuis peu une forte augmentation du nombre de ses programmes d'enseignement en santé publique. La structure de ces programmes et leur adéquation aux besoins du système de santé national restent méconnues.

Objectif : Nous avons examiné les programmes en santé publique diplômants qui existent actuellement au Pakistan et nous avons étudié le marché national pour ce domaine ainsi que les besoins du système de santé.

Méthodes : Une étude à méthodologie mixte a été réalisée entre janvier 2015 et mars 2016. Dix-sept programmes en santé publique diplômants ont été passés en revue afin de déterminer leurs caractéristiques programmatiques et pédagogiques. Treize entretiens avec des informateurs clés ont été menés afin d'analyser les besoins du système de santé et les problèmes des personnels dans le secteur de la santé publique.

Résultats : Nous avons constaté des différences considérables entre les filières académiques en santé publique, tant sur le plan des cours proposés que des heures d'étude, des effectifs du corps enseignant et des frais de scolarité. Environ 70 % des programmes diplômants en santé publique étaient génériques (c'est-à-dire sans filière spécialisée) et seuls 18 % proposaient des stages pratiques. La valeur médiane des frais de scolarité généraux (en 2016) s'élevait à 10 350 dollars US. Au cours des entretiens avec les informateurs clés, les problématiques soulevées comprenaient le manque de compétences pratiques en matière de santé publique, les connaissances limitées concernant les derniers principes théoriques, les faibles compétences en communication et l'orientation insuffisante vers les moyens informatisés. Les thématiques identifiées dans les domaines des connaissances et des compétences nécessaires afin de relever les défis futurs du Pakistan en matière de santé publique comprenaient une approche intellectuelle systémique, des compétences informatiques axées sur les soins de santé et des aptitudes en leadership et en gestion.

Conclusions : L'enseignement en santé publique au Pakistan n'est pas à la hauteur des difficultés auxquelles le pays fait face à l'heure actuelle. Le Pakistan a besoin d'un organisme d'accréditation national en santé publique capable de réglementer l'enseignement, d'harmoniser les normes mondiales en fonction du contexte local et de développer des filières professionnelles pertinentes.

تعليم الصحة العامة واحتياجات النظام الصحي بباكستان: دراسة باتباع مزيج من الطرق

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الخلاصة

الخلفية: شهدت باكستان مؤخرا نموًّا كبيرًا في برامج التعليم في الصحة العامة. إن المعلومات قليلة حول بنية برامج التعليم في الصحة العامة وما إذا كانت استجابتها كافية لتلبية احتياجات النظام الصحي الوطني.

الهدف: استعرضنا البرامج الموجودة حاليًّا لمنح الشهادات الدراسية في الصحة العامة في باكستان إلى جانب استكشاف سوق الصحة العامة واحتياجات النظام الصحي على الصعيد الوطني.

طرق البحث: أجرينا دراسة بمزيج من الطرق في الفترة بين يناير/ كانون الثاني ٢٠١٥ ومارس/ آذار ٢٠١٦. استعرضنا المواصفات البرنامجية والتلقينية في ١٧ برنامجًا يمنح شهادة في الصحة العامة. أجرينا ١٣ مقابلة مع أشخاص ذوي أهمية رئيسية كمصادر للمعلومات لاستكشاف احتياجات النظام الصحي والتحديات ذات الصلة بالقوى العاملة في الصحة العامة.

النتائج: وجدنا اختلافًا كبيرًا بين البرامج الأكاديمية في مجال الصحة العامة من حيثُ الدورات التعليمية التي تقدمها والساعات المعتمدة التي تحتسبها وعدد أعضاء هيئة التدريس فيها والرسوم الدراسية التي تطلبها. واتضح لنا أن حوالي ٧٠٪ البرامج التي تمنح شهادات في الصحة العامة

كانت عامة (أي أنها لا تركِّز على مسار تخصصي)، وأن نسبة التدريب العملي الذي تقدمه لا يزيد على ١٨٪ فقط. وكان متوسط تكلفة رسوم التعليم في عام ٢٠١٦ مقدرة بالدولارات الأمريكية ١٠٣٥٠ . أثناء المقابلات مع الأشخاص ذوي الأهمية الرئيسية كمصادر للمعلومات اتضح لنا مواضيع التحديات ومنها الافتقار إلى المهارات العملية في مجال الصحة العامة، والمعرفة المحدودة النطاق بأحدث المبادئ النظرية، وتدني مستوى مهارات الاتصال، وعدم كفاية التوجه نحو تكنولوجيا المعلومات. وحددنا المواضيع التي تدور حول مجالات المعلومات والمهارات اللازمة لمواجهة التحديات المستقبلية في مجال الصحة العامة في باكستان ومنها توجيه الذهن نحو التفكير بالنظام، ومهارات تكنولوجيا المعلومات في الرعاية الصحية، ومهارات القيادة ومهارات الإدارة.

الاستنتاجات: لا يلبي التعليم في مجال الصحة العامة في باكستان مقتضيات التحديات الوطنية الحالية. تحتاج باكستان إلى هيئة اعتماد وطنية في الصحة العامة لتنظيم التعليم، ومواءمة المعايير العالمية مع السياق المحلي وتطوير مسارات المستقبل المهني ذات الصلة.

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An estimation of staffing requirements in primary care in Oman using the Workload Indicators of Staffing Needs method

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Abstract

Background: Oman is a high-income country having a relatively small population scattered over large sparsely populated areas. This presents challenges to the provision of health services. It is important to ensure that all health facilities at all levels of care have the right number and skills mix of health workers to deliver quality health care.

Aims: The main aim was to develop national staffing norms to ensure adequate numbers, appropriate skills mix and equitable distribution of health professionals in primary health care (PHC) using the workload indicators of staffing needs (WISN) method.

Methods: All types of PHC services were itemized (promotive, preventive, curative, and rehabilitative and support services). We used 2014 data from the health information system and the human resources management information system to develop staffing norms using the WISN method. First we set the norms based on the national average for the activity standards, then simulated the norms in Muscat governorate, which has 32% of the population.

Results: We calculated the required numbers of GPs and specialists for PHC centres providing core as well as core and supplementary services and the expected annual outpatient attendance. The simulation showed that doctors were less workload stressed (WISN ratio 1.02) than nurses (WISN ratio 0.66) on average, although some variations between health centres were noted.

Conclusions: Additional parameters (e.g. planned new services; local disease profile; change in health policies) may be added in future to re-adjust the calculation method once the health services mapping and human resources for health profiles for each governorate is completed.

Keywords: health services, human resources, Oman, WISN, workload

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Introduction

The Sultanate of Oman is a high-income country having a relatively small population of nearly four million, of which 42.2% are expatriates or non-nationals, scattered over large areas of sparsely populated settlements which present challenges to the provision of health services (*1*).

The Ministry of Health recognized the importance of ensuring that all health facilities at all levels of health care have the right number and skills mix of health workers to deliver quality of health care to the population served. This was stated clearly in Oman Health Vision 2050 that called for quality care and sustained health (*1*). As a result, the Directorate General of Planning and Studies and the Directorate General of Primary Health Care worked jointly in adapting and adjusting the workload indicators of staffing needs (WISN) method. This was developed by the World Health Organization (WHO) to develop the national standards for primary health care institutions to assist health planners and managers to appropriately recruit and distribute health workers across geographical locations and primary health care (PHC) facilities (*2*) and has been used by many countries in different settings (*3–6*). It calculates the number of health workers per health facility based on the workload by providing gap/excess between the current and required number of health workers, and it also provides a proxy measure, the WISN ratio, to assess workload pressure on health workers.

Our objective is to develop national staffing norms to ensure adequate numbers, appropriate skills mix and equitable distribution of professionals working in PHC in Oman using the WISN method. This paper describes the process of formulating the national norms and presents the key findings and some of the limitations.

Methods

First, a joint team from the Directorate General of Planning and Studies and the Directorate General of Primary Health Care listed all types of primary health care services provided currently. This list comprises 42 services that encompass promotive, preventive, curative, and rehabilitative and support services. Next, the team categorized the services into three packages of services based on the location and catchment population served. These are: core services (basic), supplementary services, and complementary services (Table 1). Hence, each health facility will provide a defined package of primary health care ser-

Table 1 List of health service packages provided at primary health care health facilities, Oman, 2014

Core (basic)	Supplementary	Complementary
Outpatient clinic	Acute care	Delivery services
Child health/vaccination	Infertility	Training facilities
Antenatal & postnatal care	Speciality clinic:	
Birth spacing	Dermatology	
Nutrition & growth monitoring	Internal medicine	
Care of the elderly	Obstetrics & gynaecology	
Counselling & health education	General surgery	
Community outreach services & activities	Orthopaedic	
School health services	Nephrology	
Mental health care	Eye care	
Noncommunicable diseases:	Ear, nose and throat (ENT)	
Diabetes & endocrinology	Screening services	
Cardiac diseases	Ultrasonography	
Asthma & chronic respiratory diseases	Physiotherapy	
Dental care	Environmental health	
Laboratory investigations		
Radiology (X-ray)		
Dispensing of drugs		
Medical records		
Triage		
Observational beds		
Ambulance service		

vices within its catchment area.

The WISN steps were followed in calculating the health service activity (activities performed by all members of the staff category and for which annual statistics are regularly collected) and the support activity (the important activities that support health service activities, performed by all members of the staff category but for which annual statistics are not regularly collected). Thus the health service activities of doctors, nurses, dentists, pharmacists, assistant pharmacists and laboratory technicians were listed, the activity standards (defined as the time necessary to perform an activity to acceptable professional standards in the local circumstances) and standard workloads (the amount of work within a health service component that one health worker can do in a year) (2) were set and calculated manually. It is worth mentioning that most the activity standards set for the health service activities of the general practitioner (GP) were 16 minutes per case, thus the team decided to take it as an average to develop the national norms. The same applied for the specialist (21 minutes per case).

The support activities for GPs were also identified (for health centres providing the core services as well as those providing core and supplementary services); the category allowance standard, defined as the allowance standard for support activities performed by all members of a staff category (2), was determined for both types of health centre (17% for centres providing core activities and 23% for centres providing core and supplementary services); The category allowance factor (a multiplier used to calculate the total number of health workers required for health service and support activities) was then calculated (2). The category allowance factor was set as minimum and maximum (i.e. 1.2 and 1.3) to suit the context of the PHC institutions in terms of service package based on the formula:

Category allowance factor = 1/[1 – (total category allowance standard/100)].

Some modifications to the WISN were made in order to ease the development of the national norms, e.g. setting the personal time allowance as 15% instead of calculating the individual allowance factor, taking the national average number of nurses per doctor at PHC level as 2.2 instead of applying the WISN for nurses, calculating the average visits per person per PHC facility per year 4.2. This average was determined using the data of the annual health report for 2014 (9 546 903 visits/2 260 705 population) (7) and linking it to the catchment population.

The PHC institutions that provide the core services are staffed by GPs, while the PHC institutions that provide both the core and supplementary services are staffed by GPs plus specialists.

Where activities are shared between two cadres (e.g. vaccination of children where the child should first see the doctor and then go to the nurse to receive the vaccination), the activity standard was divided between the two cadres according to the time spent by each cadre. The Directorate General of PHC validated the main workload components and activity standards.

The data used to calculate the staffing norms were from 2014 (7) and extracted from the computerized records of the health information system and the human resources management (HRM) information system. The calculations were based on the PHC services utilization pattern in 2014, which showed that the average annual number of visits per person per PHC facility was 4.2 (7).

Although the staffing norms were made for all cadres working at PHC institutions, the calculations displayed in the results are attributed to doctors and nurses. The team first set the norms based on the national average of the activity standards, then simulated the norms in Muscat governorate (the capital) based on 2014 annual

statistics. The WISN ratio was also calculated by dividing the current number of staff by the required number. A WISN ratio of 1.00 shows that current staffing is in balance with the staffing demands for the workload of the health facility. A WISN ratio of > 1.00 is evidence of overstaffing in relation to the workload. Conversely, a WISN ratio of < 1.00 indicates that the current number of staff is insufficient to cope with the workload (2). The smaller the WISN ratio, the greater the work pressure.

This methodology will inform human resources for health policy-makers and decision-makers and allow them to see whether the national standards are adhered to by PHC institutions.

Results

National staffing norm for doctors (GPs and specialists)

The calculated numbers of GPs and specialists for the PHC health centres providing core services as well as those providing core and supplementary services were based on the factors shown in Table 2; the averages shown are the national averages based on the 2014 annual statistics. The activity standard of the general practitioner (GP) was 16 minutes per case, while for the specialist was 21 minutes per case.

The required numbers of GPs and specialists for PHC health centres providing core as well as core and supplementary services are shown in Table 3. The expected values for annual outpatient attendance are the national averages based on the 2014 annual statistics and related to the catchment population. The average annual number of visits per person per PHC facility was 4.2 based on the PHC services utilization pattern.

National staffing norms for nurses

The joint team decided that the calculation at PHC facilities would be based on the average number of nurses per doctor at PHC level, i.e. 2.2, according to the 2014 figures (7); this is near to the average of 2.3 specified in Oman Health Vision 2050 (1). The required numbers of nurses for PHC health centres providing the core services as well as core and supplementary services are shown in Table 4. The variations in the number required were due to the catchment population in addition to the package of services provided in the health facilities.

The same method of calculation was used in the simulation for the health centres in Muscat governorate (the capital), which has 32% of the total population and encompasses the largest number of health facilities

Table 2 List of factors used to calculate numbers of GPs and specialists for primary health care centres, Oman, 2014

Factor	Time
Total working days per doctor per year (after subtracting annual leave, national holidays, etc)	212
Total working days per week	5
Working hours per day	7
Total working hours per week	35
Total working hours per year	1484
Personal time allowance[a]	15%
Average time per case for a GP (minutes)[b]	16
Average time per case for a specialist (minutes)[b]	21

[a]*Includes meetings, trainings, supervision, responding to telephone calls, breaks, etc.*
[b]*Average time per case is the activity standard.*

Table 3 The required numbers of general practitioners (GPs) and specialists for primary health care (PHC) centres providing core as well as core and supplementary services, Oman, 2014

Catchment population	Expected annual outpatient attendance for PHC core services	Total hours per year[a]	GPs required	
			Min (1.2)[b]	Max (1.3)[b]
		Centres providing core services		
≤ 5000	13 514	3604	3.0	3.0
5001–10 000	27 029	7208	6.0	6.0
10 001–15 000	40 543	10 811	8.0	9.0
		Centres providing core & supplementary services		
≤ 5 000	56 886	16 443	8.0	5.0
5001–10 000	68 264	19 731	9.0	6.0
10 001–15 000	79 641	23 020	11.0	7.0

[a]*This was used to calculate the total number of doctors needed to carry out the expected workload per catchment area population.*
[b]*Category allowance factor.*

Table 4 Required numbers of nurses for primary health care centres providing core and supplementary services, Oman, 2014

Catchment population	Doctors required	Nurses required	
		1.2a	1.3b
	Centres providing core services		
≤ 5 000	3	8	9
5 001–10 000	6	16	18
10 001–15 000	8	21	23
	Centres providing core & supplementary services		
20 001–25 000	13	34	37
25 001–30 000	15	40	44
30 001–35 000	18	48	53

[a]*Category allowance factor (minimum).*
[b]*Category allowance factor (maximum).*

compared with the other 10 governorates. A comparison of the national staffing norms for doctors and nurses with the existing staffing levels in Muscat governorate (for 2014) was made (Table 5). Overall, according to the average WISN ratio, doctors were less workload stressed (1.02) than nurses (0.66), although some variations between health centres were noticed (doctors range 0.6–2.3; nurses range 0.4–1.6).

Discussion

The WISN tool, after being adapted, was demonstrated to be useful in setting the national norms. It is also a dynamic tool whose use can be repeated on a frequent basis (depending on the availability of data) to improve the adequacy and distribution of health workers within governorate or across similar types of PHC facilities (based on the service package). The tool has been used in many countries and for different purposes. Ghana was among the pioneering countries to develop an evidenced-based staffing norm using the WISN tool (*8*). The overall purpose of the WISN study in Kenya was to inform development of human resources for health norms and standards (*8*). In Namibia, it has been applied to determine staffing requirements to rationalize staff requirements for nurses, doctors, pharmacists and pharmacist assistants (*3*). The pilot phase in Botswana provided an excellent opportunity to examine the total workload of the facilities using the WISN results for several health worker categories before national roll-out (*8*). In East Africa, the method has been used in Tanzania to determine the staffing needs for quality prenatal care for nurse officers, nurse midwives and nursing assistants (*9*). It was also used to calculate the staffing requirements for medical officers, nurses and laboratory staff in Kenya (*10*). This method was initially used to determine the nursing staff requirements in Lacor, a private, not-for-profit hospital in Northern Uganda in 2005 (*4*). It has also been used in India and Bangladesh (*5*,*11*).

The application of WISN in Namibia revealed that the process is flexible and should be designed to fit the goals and scope of the WISN application (*3*). It was suggested that policy-makers and facility managers could use the WISN method to estimate health worker requirements for a range of needs and scenarios, including making staff adjustments in response to implementation of new services, decentralization, or reconfiguration of primary care services (*3*).

The simulation of the staffing norms using the 2014 data of Muscat governorate assisted in comparing the existing situation in the PHC health facilities against the national norms, and identifying the staffing equity across the governorate. It also showed an overall shortage in the number of nurses and a slight surplus for doctors although some variations between the health centres were noticed. When calculating the WISN ratio, it showed that some health centres work under great workload stress compared to others.

One of the limitations concerned the estimates that were used to calculate the required staffing; these were linked mainly to the package and pattern of health services provided to the current population, which might not be applicable to the future population. Thus the estimates will need to be frequently adjusted in line with new developments.

Conclusion

Additional parameters could be added in the future to re-adjust the calculation method once the health services mapping and human resources for health profiles for each governorate is completed. Examples of these parameters include planned new services; the trends in health services utilization pattern by different population groups; the optimal or desired level of skills mix of health workers per qualification and for each type of health facility; the local disease profile; changes in health policies (such as shifting some services from the supplementary to the core services); demographic characteristics and health needs of the population served; health workforce growth; and advances in health technology and new therapies, which sometimes alter the average time spent, e.g. for consultations or carrying out procedures.

Funding: None.

Competing interests: None declared.

Table 5 **Status in Muscat governorate according to current situation (CS) and national primary health care (PHC) norms, 2014**

Health centre	Item	Catchment area population	No. of outpatient visits	No. of doctors	No. of nurses
Siya	CS	3679	16 275	6	6
	PHC norm	≤ 5000	13 500	3	7
Mutrah	CS	19 798	47 482	15	15
	PHC norm	≤ 20 000	54 000	12	26
Ash Shaadi	CS	37 540	92 734	14	24
	PHC norm	≤ 40 000	108 000	23	50
Al Amrat	CS	19 325	77 002	15	20
	PHC norm	≤ 20 000	54 000	12	26
Al Mazari	CS	2865	14 153	5	7
	PHC norm	≤ 5000	13 500	3	7
Yiti	CS	4429	23 203	5	11
	PHC norm	≤ 5 000	13 500	3	7
Al Khawd	CS	41 145	101 934	15	27
	PHC norm	≤ 45 000	121 500	26	57
Wadi Al Arbiyin	CS	560	1118	3	3
	PHC norm	≤ 5 000	13 500	3	7
As Sifah	CS	1969	9390	3	6
	PHC norm	≤ 5 000	13 500	3	7
Bamah	CS	3416	1265	4	6
	PHC norm	≤ 5000	13 500	3	7
Al Wadi Al Kabeer	CS	17 474	42 747	13	17
	PHC norm	≤ 20000	54 000	12	26
Al Mabeela	CS	30 274	99 929	16	19
	PHC norm	≤ 35 000	94 500	20	44
Ruwi	CS	18 398	47 186	14	19
	PHC norm	≤ 20 000	54 000	12	26
As Seeb	CS	19 473	70 243	13	22
	PHC norm	≤ 20 000	54 000	12	26
Al Ghoubra	CS	31 036	59 965	16	18
	PHC norm	≤ 35 000	94 500	20	44
Al Azaiba	CS	16 086	50 107	14	23
	PHC norm	≤ 20 000	54 000	12	26
Al Wattyah	CS	27 918	58 339	14	17
	PHC norm	≤ 30000	81 000	18	40
Al Khuwayr	CS	34 055	73 448	16	24
	PHC norm	≤ 35 000	94 500	20	44
An Nahdah	CS	18 895	94 522	16	21
	PHC norm	≤ 20 000	54 000	12	26
South Al Mabeela	CS	20 244	98 106	18	22
	PHC norm	≤ 25 000	67 500	15	33
Al Mawaleh	CS	23 106	91 245	19	19
	PHC norm	≤ 25 000	67 500	15	33
Al Ansab	CS	9593	70 729	14	21
	PHC norm	≤ 10 000	27 000	6	13
Hai Al Mina	CS	6167	26 542	13	21
	PHC norm	≤ 10 000	27 000	6	13
Al Hail	CS	19 136	72 329	13	24
	PHC norm	≤ 20 000	54 000	12	26

Table 5 Status in Muscat governorate according to current situation (CS) and national primary health care (PHC) norms, 2014 (*concluded*)

Health centre	Item	Catchment area population	No. of outpatient visits	No. of doctors	No. of nurses
Muscat	CS	21 698	67 880	14	17
	PHC norm	≤ 25 000	67 500	15	33
North Al Mawaleh	CS	21 412	61 315	13	24
	PHC norm	≤ 25 000	67 500	15	33
Al Hajer	CS	9047	51 103	10	18
	PHC norm	≤ 10 000	27 000	6	13
Total	CS	469 691	1 479 188	318	453
	PHC norm			313	687
	Average WISN ratio			1.02 (318/313)	0.66 (453/687)

Workload indicators of staffing needs (WISN) ratio for each centre can be calculated by dividing the CS/PHC norm

Estimation des besoins en personnel dans les soins de santé primaires à Oman : application de la méthode des indicateurs des besoins en personnel par rapport à la charge de travail

Résumé

Contexte : Oman, un pays à revenu élevé, a une population relativement réduite, répartie sur de vastes zones faiblement peuplées. Ceci présente certaines difficultés quant à la prestation des services de santé. Il est important de faire en sorte que tous les établissements de santé, à tous les niveaux de soins, disposent d'effectifs et de compétences adéquats afin de pouvoir fournir des soins de santé de qualité.

Objectif : L'objectif principal était d'élaborer des normes de recrutement nationales afin de garantir des effectifs suffisants, une gamme de compétences adéquate et une répartition équitable des professionnels de soins de santé primaires (SSP) en se fondant sur la méthode des indicateurs des besoins en personnel par rapport à la charge de travail (méthode WISN ou *Workload Indicators of Staffing Needs*).

Méthodes : La liste détaillée de tous les types de services de SSP a été présentée (promotion, prévention, traitements, réadaptation et soutien). Nous nous sommes appuyés sur des données de 2014 tirées du système d'information sanitaire et de gestion des ressources humaines afin d'élaborer des normes de recrutement à l'aide de la méthode WISN. Nous avons d'abord défini les normes en fonction de la moyenne nationale des critères relatifs aux activités, puis nous avons simulé une mise en œuvre de ces normes dans le gouvernorat de Mascate, qui compte 32 % de la population.

Résultats : Nous avons calculé le nombre nécessaire de médecins généralistes et de spécialistes pour les centres de SSP fournissant des services de base ainsi qu'une combinaison de services de base et de services supplémentaires et nous avons calculé ce que devrait être le taux annuel de consultations ambulatoires. La simulation a montré que les médecins étaient, en moyenne, moins victimes du stress dû à la charge de travail (ratio WISN de 1,02) que les personnels infirmiers (ratio WISN de 0,66), bien que des variations d'un centre de soins à un autre aient été constatées.

Conclusions : À l'avenir, d'autres paramètres (par exemple : nouveaux services prévus ; profil local des maladies ; modifications des politiques de santé) pourront être ajoutés afin d'effectuer un nouvel ajustement de la méthode de calcul après réalisation d'une cartographie des services de santé et des ressources humaines pour chaque gouvernorat.

تقدير احتياجات التوظيف بالرعاية الصحية الأولية بعُمان باستخدام مؤشرات حِمل العمل

نزار محمد، أحمد القاسمي، سعيد اللمكي، محمد بيومي، علي الهنائي

الخلاصة

الخلفية: سلطنة عُمان من البلدان المرتفعة الدخل والتي فيها عدد قليل نسبيًا من السكان يتناثرون في مناطق شاسعة تقل فيها الكثافة السكانية. وهذا يطرح تحديات في توفير الخدمات الصحية. فمن الأمور الهامَّة لتقديم الرعاية الصحية العالية الجودة ضمان امتلاك جميع المرافق الصحية في جميع مستويات الرعاية للعدد الصحيح من العاملين الصحيين وتوافر المزيج الصحيح من المهارات الصحية فيها.

الهدف: كان الهدف الرئيسي لهذه الدراسة هو تطوير معايير التوظيف الوطنية التي تضمن الحصول على أعداد كافية من الموظفين وعلى مزيج مناسب من المهارات لديهم وعلى التوزيع العادل للعاملين الصحيين في مرافق الرعاية الصحية الأولية من خلال استخدام طريقة تحديد احتياجات التوظيف استنادًا إلى مؤشرات حِمْل العمل.

طرق البحث: تم توزيع جميع أنماط خدمات الرعاية الصحية الأولية ضمن أصناف (تعزيزية ووقائية وعلاجية وتأهيلية وخدمات الدعم). واستعملنا بيانات عام ٢٠١٤ المستمدة من نظام المعلومات الصحية، ومن نظام المعلومات لإدارة الموارد البشرية لوضع معايير التوظيف باستخدام طريقة تحديد احتياجات التوظيف استنادًا إلى مؤشرات حِمْل العمل. فقمنا أولاً بوضع المعايير استنادًا إلى المتوسط الوطني لمعايير الفعَّاليات، ثم بمحاكاة المعايير المتبعة في محافظة مسقط، والتي تضم ٣٢٪ من السكان.

النتائج: لقد قمنا بحساب أعداد المطلوبة من الأطباء الممارسين العامين والاختصاصيين للعمل في مراكز الرعاية الصحية الأولية لتقديم الخدمات الأساسية، والخدمات الأساسية والتكميلية وللعدد المتوقع سنويًّا من المراجعين للعيادات الخارجية. وأظهرت المحاكاة أن الشدة التي يعاني منها الأطباء بسبب حِمْل العمل (مقدرةً بنسبة تحديد احتياجات التوظيف استنادًا إلى مؤشرات حِمْل العمل ١,٠٢) أقل في المتوسط من تلك النسبة لدى الممرضات (٠,٦٦)، على الرغم من ملاحظة بعض الاختلافات بين المراكز الصحية.

الاستنتاجات: ويمكن في المستقبل إضافة معالم إضافية (مثل الخدمات الجديدة التي يُخَّطط لتقديمها ومرتسم الأمراض المحلية والتغيير في السياسات الصحية) لإعادة ضبط أسلوب الحساب بمجرد استكمال وضع الخرائط للخدمات الصحية ومرتسمات الموارد البشرية الصحية لكل محافظة.

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Physicians' retention rate and its effective factors in the Islamic Republic of Iran

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Abstract

Background: Migration of physicians from less developed countries to affluent ones has become as one of the major concerns of human resource policy-makers. This leads to problems such as inequity in the distribution of physicians, lack of physicians in less developed areas, as well as an excess of the health workforce in developed environs. Thus, policy-makers aim to increase retention of physicians in their places of origin.

Aims: This study aimed to find those effective factors for the retention of physicians in the Islamic Republic of Iran.

Methods: 30 569 records of public sector physicians in 2016 were gathered from the Ministry of Health and Medical Education database, and the retention rate of each province was calculated. Geographic information system (GIS) was used to show retention in each province, and linear and logistic regression analysis were used to determine the effective factors for physicians' retention in the country.

Results: There was a significant relationship between per capita gross domestic product of each province and its retention rate of physicians (OR = 1.56), retention rate of family physicians (OR = 7.38), and retention rate of specialists (OR = 1.59). In addition, relationships were significant for the human development index (all physicians [OR = 1.22], family physicians [OR = 2.36], and specialists [OR = 1.23]). Married physicians, higher paid physicians, and those who worked in headquarters and clinics showed greater willingness to stay in their area of origin.

Conclusions: Physicians' retention rate is dependent on both macro and microlevel factors.

Keywords: Retention rate, physicians, specialists, Iran

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Introduction

Policy-makers in all countries are concerned about migration. It has been studied and explained by sociologists, economists, demographers and related public health groups within labor markets (*1*). Zimmerman et al. estimated that 214 million people move internationally and approximately three-quarters of a billion people migrate within their own country (*2*). This migration affects health care due to impacts on service provision, quality of care, and distribution of human resources for health (HRH) across different parts of the health system, countries, and geographic areas (*3*).

Unbalanced distribution of health personnel between and within countries is a serious global problem (*4*). Many countries, especially middle- and low-income countries, have trouble with maldistribution and shortages of HRH (*5,6*). Overall, it is notable that about one half of the world's population lives in rural and remote areas, yet this half is served by only one quarter of the world's doctors and by less than one third of the world's nurses (*7*). For example, in Senegal, Dakar is the most urbanized area with more than 60% of the country's physicians but only 23% of the total population. In Canada, 24% of the population is rural, but only 9.3% of physicians are based in rural areas (2006) (*8*). Asia, with about half the world's population, has access to only about 30% of the world's health professionals. Moreover, Africa – with the highest burden of disease – has severe shortages of health professionals and confirms the unbalanced relationship between the need for healthcare and distribution of HRH (*5*).

One of the most damaging effects of severely imbalanced and under-resourced health systems is the difficulty in producing, recruiting, and retaining health professionals, particularly in remote areas (*9*). Weakness in the compensation system, low income, poor working conditions, lack of supervision, lack of incentives, lack of equipment and infrastructure, and also the weakness of the health system, all contribute to the immigration of healthcare personnel from remote areas (*5*). Reviews of factors impacting staff attraction and retention in middle- and low-income countries showed that international, national, local (home and social) and work environment

and individual factors influence attraction and retention (*5*).

A systematic review of low-income countries showed that financial incentives (90%), career development (85%), hospital or clinic management (80%), education and training opportunities (strong motivating affects) and recognition and/or appreciation, either from managers, colleagues, or the community (70%) could motivate health workers and increase retention (*10*). Because this is global problem, the World Health Organization (WHO) suggested recommendations to improve the recruitment and retention of health workers in remote and rural areas in four major categories: education, regulation, financial incentives for health workers in remote and rural areas, and professional and personal support for health workers in remote and rural areas (*8*).

In the Islamic Republic of Iran, the distribution of HRH is not equitable between and within provinces, especially in deprived areas (*11*,*12*). For example, a survey using Gini and Atkinson measures of inequality for general physicians (GPs) from 2006 to 2011 showed a lower status when taking into account the province's health needs. Another study showed that health workforce distribution had varied widely in the country, with deprived provinces particularly negatively impacted. Lower Gini coefficients in 2010–2012 were due primarily to the increase in health workforce in high-income provinces, while deprived provinces continued to face serious problems (*13*,*14*).

Inappropriate and unequal distribution of health workforce is a major concern for the health management sector (*15*). It would appear that at least five factors influence the distribution of HRH in the Islamic Republic of Iran, namely the health service, geography, demographics, socioeconomic development of the area in question, and personal factors (*16*). Because of increasing numbers of health sciences students during the past two decades (*13*,*17*), it is important to study their distribution and retention across the country in order to develop policies on decreasing inaccessibility to HRH and also ensure the efficient and effective use of resources. Thus, it is relevant to know the proportion of health workers who operate in their home cities and provinces, compared to the number that emigrates to other areas and the reasons for this. Since the majority of HRH is employed by the Iranian Ministry of Health and Medical education (MoHME), this study focused on personnel internal immigration data gained from the ministry. This study provides evidence for HRH in different provinces and assists policy-makers in the revision of compensation and motivation systems to improve the retention of HRH personnel in deprived provinces.

Methods

Individual level data

Data for public sector physicians, which includes general physicians and specialists, were gathered from MoHME's database in 2016. The database, called "AZERAKHSH", contains information on all MoHME personnel in its headquarter and all medical universities controlled by the office of human resources management. The database is used to monitor the number of health personnel, location, retirement, staff transfers, and includes individual, occupational and salary information. From the data sources, all names were removed for ethical consideration. After screening of non-related samples, 30 569 records remained. Non-related samples contained data for 158 physicians for whom information on place of birth or province of work were not available. Database information included gender, educational level, specialty, monthly salary, marital status, first three digits of national ID number, province of work and employment position of each physician. It should be emphasize that studied records include all general physicians and specialists who are affiliated to MoHME with all types of contracts (short-time and permanent).

Provincial level data

To analyze the relationship between provincial factors and HRH retention rates, provincial data were gathered, consisting of per capita gross provincial product (per capita GPP), Human Development Index (HDI) for each province (2016), life expectancy at birth (2016), provincial adult literacy rate (2016), and per capita GPP after adjustment for gas and oil sales (2016). Provincial data were sourced from the Iranian Statistical Centre database.

Statistical analysis

To define retention of physicians, the province of birth was compared with the province of employment. If the physician was working in his/her province of birth, it was considered that he/she has remained in their province or birth. The "retention at place of birth" rate was calculated for each province using the following formula:

$$NR_i = Wb_i - Wo_i$$

NR_i = net retention of the province.

i and Wb_i = number of physicians born in the province i and worked in other provinces.

Wo_i = number of physicians born in other provinces and worked in province i.

The net retention rate (NRR) for each province (i) was calculated using the following formula:

$$NRRi = \frac{NRi}{WRi}$$

NRi = net retention

WRi = number of physicians who worked in each province (*17*–*19*).

The index "i" runs from 1 to 31. NRR were calculated for general physicians, family physicians, and specialists, respectively. NRR GIS maps were created for each province and linear regression analysis was used to show the effective factors for NRR in each province. The relationship between NRR, Human Development Index (HDI) and GDP for each province was calculated using ordinarily least square (OLS) regression models. For this purpose, three different models were utilized with dependent variables of NRR for family physicians,

specialists and general physicians. Independent variables of these models contained provincial GDP and HDI figures. Lastly, a mixed effect two-level logistic regression was estimated to determine effective factors of retention of physicians at both the provincial and individual level. To calculate physician retention, two values (0 = migrate to provinces outside place of birth, 1= remaining in place of birth) were used. Gender, marital status, salary, specialty, and education level were added as explanatory variables at the individual level, and GDP and HDI were added as explanatory variables at the provincial level. Variance inflation factor (VIF) test was used to show the level of co-linearity between explanatory variables. Goodness of fit statistics of the model contain Log likelihood and Wald test were also estimated. All analysis was done using STATA MP version 14 software (College Station, Texas, USA).

Results

Figure 1 indicates the GIS map of retention of physicians in each Iranian province. Larger circles illustrate higher NRR. Alborz province (closest to the capital Tehran) and Southern provinces had the lowest retention rates, while Tehran and the northern provinces (Caspian Sea border) had the highest retention rates. Findings were also similar for specialists and family physicians' retention rates. In addition, the HDI of each province was colour coded in the map and categorized into 5 groups from high to low. As indicated in Figure 1, provinces with larger circles have brighter colours, indicating that provinces with higher levels of HDI have higfher NRRs.

Table 1 indicates the results of the regression on the relationship between NRR of physicians versus HDI and GDP. HDI and GDP per capita were both positively significant (HDI coefficient: all physicians: 0.20, family physicians: 0.86, specialists: 0.21) (GDP coefficient: all physicians: 0.45, family physicians: 2.03, specialists: 0.47). Therefore, it is indicated that in provinces with higher HDI and per capita GPP, net retention rate was higher.

Table 2 indicates the results of the mixed effect multilevel logistic model for analyzing effective factors of retention in place of birth at the individual level. Sex did not have any significant relationship with retention (OR = 0.9721, $P = 0.285$). The likelihood of retention of married physicians was higher (OR = 1.33, $P < 0.001$). Specialists (OR = 0.61, $P = < 0.001$) and sub-specialist physicians (OR = 0.63, $P < 0.001$) show greater migration to other provinces compared to GPs. Physician salary OR was 1.00 ($P = 0.000$). Therefore, salary is not an effective factor for retention. In addition, physicians with positions at MoHME headquarters (OR = 1.19, $P = 0.010$) and clinics (OR = 1.56, $P < 0.001$) were more likely to remain in their

Figure 1 Geographic Information System (GIS) map to show retention of all physicians, family physicians, and specialists. Larger circles show higher net retention rate (NRR); provinces with more lighter colours had higher human development index (HDI) scores.

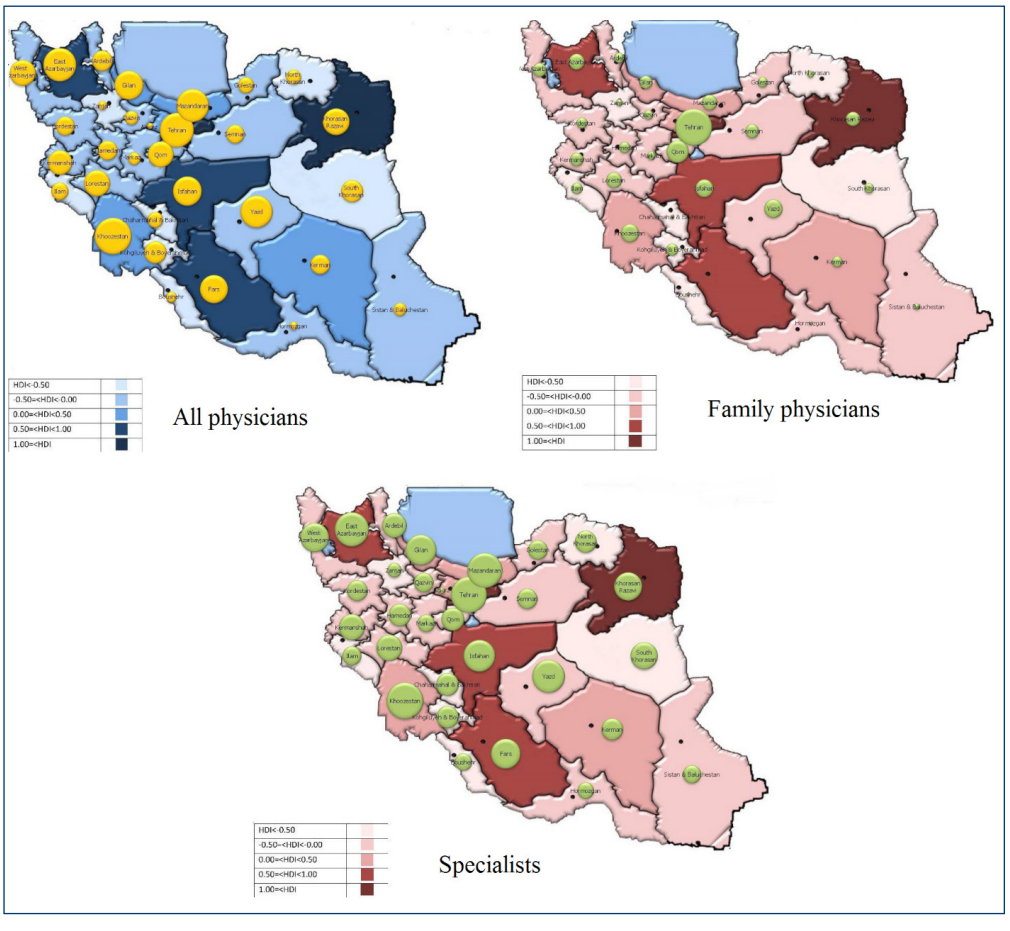

Table 1 Linear regression modes on HDI, GDP and Net Retention Rate (NRR) of provinces for all physicians, family physicians and specialists.

	Coefficient	SE*	*P*-value	95% Confidence interval		R^2
				Lower	Upper	
All physicians	**N=30569**					0.551
HDI	0.20	0.05	<0.001	0.10	0.30	
GDP (million Rls)	0.45	0.12	0.001	0.20	0.68	
Family physicians	**N=2710**					0.715
HDI	0.86	0.11	<0.001	0.63	1.10	
GDP (million Rls)	2.03	0.24	<0.001	1.55	2.52	
Specialists	**N=15074**					0.448
HDI	0.21	0.05	<0.001	0.10	0.32	
GDP (million Rls)	0.47	0.12	0.001	0.22	0.71	

**SE: Standard Error*

birthplace compared to hospital physicians. The results of VIF test showed low co-linearity between explanatory variables (Mean VIF statistics = 1.46). Income (VIF = 2.12), place of work (rural health centres) (VIF = 2.00) and academic degree level (specialist) (VIF = 2.27) had the highest level of co-linearity with other variables. Wald $\chi 2$ of model was 2516.32 (P = 0.000) and Psuedo-R^2 (goodness of fit) was 0.0636. Log likelihood of the model was -18537.968.

Discussion

Physicians at all levels of specialism are an essential HRH component. Our findings indicate that the level of provincial development is an effective factor for physician retention rate. However, low retention rates in less developed rural areas are an important issue that some medical schools are trying to address. While some studies suggested reform in medical education could improve retention in rural areas (*21–23*), other factors such as development levels of service and demographic factors are critical, but are rarely addressed in studies (*5*).

The present study aimed at finding the relationship between demographic factors, provincial development levels and physician retention. Analyzed data and GIS maps reveal that the higher the development level of a province, the higher the retention rate. Similar results were reported in a survey of eight low- and middle-income countries in Asia and Africa. In addition, it was found that work environment resources, location livability and employment conditions were non-medical factors that could affect intention to work in rural areas or to leave (*24*). Physicians, like other professionals, look for better living standards and professional development, This issue plays a significant role in their retention rate in rural areas (*25,26*). Thus, it is logical that HDI and provincial development levels have a significant relationship with retention rates. According to this finding, it is suggested that improving infrastructure in all provinces and regions could improve HRH retention.

At the individual level, gender is not a primary factor in retention while marital status is significant. The relation between demographic factors and retention in rural areas is hotly debated in the literature. Certain studies consider demographic factors as predictors of retention in rural areas (*21,27*), while others report that male physicians have a greater tendency to work in rural settings (*22,28*). However, our findings indicated that there were no gender differences when considering the tendency to stay in one's place of birth. On the contrary, many studies found that demographic variables such as marital status and gender did not affect retention or practice in rural settings (*29–31*). While there is not a clear relationship between gender and retention, according to current findings it could be concluded that development levels are more important than other factors as presented in Table 1. However, when considering other research findings, it can be concluded that area development could affect cultural and literacy levels and therefore quality of life (*27*).

Another individual factor that affects retention is salary, which is the main strategy for improving retention rates in rural areas (*32*); low salaries hinder retention (*5,7,22,33*). In the Islamic Republic of Iran, salaries are calculated on perceived provincial deprivation levels, with lower developed provinces offering higher salaries, yet payment can be irregular and still not at an attractive level. However, our findings indicated that salary did not change the tendency of physicians to remain in their place of birth.

This study did have a number of limitations. Available data did not cover all variables that could affect retention and data did not present total payments to physicians. However, many studies shows that the payment system and income of physicians play an important role in retention (*5*).

Results showed that specialists and subs-specialists have greater opportunities to migrate to other provinces when compared to GPs, who have positions in headquarters and clinics, tend to stay; thus, it can be concluded that GPs prefer job security. However, specialists tend to enjoy higher incomes in areas with higher levels of social welfare and therefore emigrate to

Table 2 Two-level mixed effect logistic regression to find effective factors of retention among Iranian physicians

	Adjusted Odds Ratio	*P*-value	95% confidence interval		number
			Lower	Upper	
Sex (female)	Ref.				14048
Sex (male)	0.972	0.285	0.923	1.022	16517
Marriage (single)	Ref.				6205
Marriage (married)	1.337	<0.001	1.253	1.426	24255
Academic Degree					
General Physician	Ref.				15493
Specialist	0.616	<0.001	0.572	0.663	12647
Subspecialists	0.633	<0.001	0.576	0.707	2525
Salary (million Rls)	1.000	<0.001	1.000	1.011	
Place of work					
Hospital	Ref.				11883
Rural h. house	0.971	0.603	0.891	1.061	5546
University/faculty	1.012	0.735	0.921	1.101	5403
Headquarter	1.194	0.016	1.034	1.376	1110
Clinic	1.562	<0.001	1.257	1.956	446
Urban h. house	1.132	0.008	1.033	1.244	1834
Others (emergency services, etc.)	0.624	<0.001	0.553	0.694	4342
GDP	0.993	<0.001	0.992	0.993	
HDI level	1.156	<0.001	1.132	1.173	
Constant variable	1.88	<0.001	1.719	2.056	
Variance of provincial level	0.015	<0.001			
Variance of provincial level (null model)	0.023				
Psuedo-R^2 = 0.0636					

more developed provinces (*23*).

According to our findings and studies from Thailand, increasing the number of medical students in areas with lower levels of HDI, registering native-born students coupled with recruitment and training for rural practice could be an appropriate policy for increasing retention in deprived and rural areas (*7,34,35*). In addition, using appropriate motivation and financial incentives, and improving working conditions are major policies that were not investigated in this research but are proposed in many other studies (*36*).

In the study, we relied on the accuracy of data collected at the country level. Any issue related to data gathering may reduce the reliability of the findings. For this, we suggest a comprehensive research that collects larger amounts of data for analysis. This could be done through questionnaires and self-reporting by physicians. In addition, the definition of retention was based on place of birth, whereas in some studies retention might be defined by the first place of employment. Ease of accessibility to comprehensive data for place of birth via the Iranian birth registration system of Iran influenced our decision for this definition in this study. Furthermore, we did not access data for those physicians who work in organizations other than MoHME and thus we were not able to analyze retention rates for them. Another important affecting factor for physician retention is dual practice, which was not considered in this study due to lack of information about the dual practice statuses of studied physicians. In addition, because of using secondary data, we could not analyze personal factors such as personal attitudes and motivation. The other important issue is differences in retention within provinces; it is assumed there is more inequality in physicians' retention within provinces' districts, and this should be a topic for further research.

Conclusion

Developmental levels and their related indicators (HDI and GDP) are factors that could affect retention of physicians of all specialisms. The research showed that this is a key factor for the retention of GPs. Thus, improvement in infrastructure in all developing provinces could result in better retention and better access to healthcare facilities by population.

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Taux de fidélisation des médecins et facteurs efficaces en République islamique d'Iran

Résumé

Contexte : La migration des médecins depuis les pays moins développés vers les pays riches est devenue l'une des principales préoccupations des responsables de l'élaboration de politiques en matière de ressources humaines. Cette situation entraîne des problèmes tels qu'une inégalité dans la répartition des médecins, un manque de médecins dans les régions moins développées, ainsi qu'un trop grand nombre de personnels de santé dans les régions développées. C'est pourquoi les responsables de l'élaboration de politiques visent à améliorer la fidélisation des médecins dans leurs régions d'origine.

Objectifs : La présente étude avait pour objectif de trouver les facteurs qui permettent de fidéliser les médecins en République islamique d'Iran.

Méthodes : En 2016, 30 569 dossiers de médecins du secteur public ont été consultés à partir de la base de données du ministère de la Santé et de l'Enseignement médical, et le taux de fidélisation a été calculé pour chaque province. Un système d'information géographique a été utilisé pour indiquer la fidélisation dans chaque province, et une analyse de régression linéaire et logistique a été appliquée pour déterminer les facteurs permettant de fidéliser les médecins dans le pays.

Résultats : Une relation significative a été constatée entre le produit intérieur brut par habitant et le taux de fidélisation des médecins (OR = 1,56), le taux de fidélisation des médecins de famille (OR = 7,38) et le taux de fidélisation des spécialistes (OR = 1,59) de chaque province. En outre, des liens importants ont été remarqués avec l'indice de développement humain (tous les médecins [OR = 1,22], les médecins de famille [OR = 2,36] et les spécialistes [OR = 1,23]). Les médecins mariés, les médecins mieux rémunérés et ceux qui officient dans une et dans des cliniques ont manifesté une plus grande volonté de rester dans leur région d'origine.

Conclusions: Le taux de fidélisation des médecins dépend à la fois de facteurs relevant des niveaux macro et micro.

معدل استبقاء الأطباء والعوامل الفعالة في جمهورية إيران الإسلامية

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الخلاصة

الخلفية: أصبحت هجرة الأطباء من البلدان الأقل نمواً إلى البلدان الغنية أحد الشواغل الرئيسية لواضعي السياسات في مجال الموارد البشرية. وهو يؤدي إلى مشاكل مثل عدم الإنصاف في توزيع الأطباء، ونقص الأطباء في أقل المناطق نمواً، فضلًا عن وجود فائض من القوى العاملة الصحية في البلدان المتقدمة. ولهذا، فإن واضعي السياسات يهدفون إلى زيادة استبقاء الأطباء في مواطنهم الأصلية.

الأهداف: هدفت هذه الدراسة إلى العثور على العوامل الفعالة لاستبقاء الأطباء في جمهورية إيران الإسلامية.

طرق البحث: جمع الباحثون ٣٠٥٦٩ سجلًا لأطباء القطاع العام في عام ٢٠١٦ من قاعدة بيانات وزارة الصحة والتعليم الطبي، وتم حساب معدل الاستبقاء في كل محافظة. واستخدم الباحثون نظام المعلومات الجغرافية لإظهار استبقاء الأطباء في كل مقاطعة، مع تحليل التَّحَوُّف الخطِّي، واللوجستي لتحديد العوامل الفعالة في استبقاء الأطباء في البلاد.

النتائج: وكان هناك علاقة كبيرة بين نصيب الفرد من إجمالي الناتج المحلي لكل مقاطعة ومعدل استبقاء الأطباء (نسبة الأرجحية = ٥٦ , ١)، ومعدل الاحتفاظ بأطباء الأسرة (نسبة الأرجحية = ٣٨ , ٧)، ومعدل الاحتفاظ بالأطباء المتخصصين (نسبة الأرجحية = ٥٩ , ١). وبالإضافة إلى ذلك، كانت العلاقات هامة مع مؤشر التنمية البشرية (جميع الأطباء [نسبة الأرجحية = ٢٢ , ١]، وأطباء الأسرة [نسبة الأرجحية = ٣٦ , ٢]، والأطباء المتخصصين [نسبة الأرجحية = ٢٣ , ١]). وقد أبدى الأطباء المتزوجون، والذين يتلقون أجورًا عالية، والذين يعملون في المقر الرئيسي وفي العيادات استعدادًا أكبر للبقاء في مناطقهم الأصلية.

الاستنتاجات: تعتمد معدلات استبقاء الأطباء على عوامل ذات مستويات كبرى وعوامل أخرى ذات مستويات صغرى.

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Encouraging junior doctors to work in rural Sudan: a discrete choice experiment

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Abstract

Background: Out-migration of physicians and urban–rural maldistribution are two of the most serious challenges facing the health sector.

Aims: To determine the preference of junior doctors for rural postings in Sudan, and estimate how much junior doctors are willing to trade off from their salaries for nonmonetary incentives.

Methods: The study targeted junior doctors who had completed their internship training and were taking their Medical Licensing Examination at the Sudan Medical Council for permanent registration. Focus group discussions were conducted to identify potentially valued incentives. A computer-based discrete choice experiment and accompanying questionnaire were administered between September and October 2012 at the two licence examination centres in Sudan.

Results: Four hundred and fifty-five doctors completed the survey. More than one third of the respondents intended to emigrate from Sudan immediately and another 30% within the next two years. The findings showed that providing scholarships to train abroad, improving the standard of health facilities to an advanced level, and providing on-site supervision were the attributes most preferred by the respondents and they were willing to trade off SDG 3650 (US$ 608), SDG 1997 (US$ 333) and SDG 1948 (US$ 325) of their salaries for these, respectively. Less-preferred attributes were availability of supervision by telephone, followed by a scholarship in family medicine and a 2-year commitment, post-training.

Conclusions: Authorities may consider the above preferences to enhance human resources for attraction strategies in rural areas. Addressing the supervision issue may be more feasible for policy-makers in the short term, when compared to improving salaries and infrastructure.

Keywords: junior doctors, Sudan, rural areas, migration, salary

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Introduction

The World Health Report of 2006 estimated that half of the global population was living in rural areas served by < 25% of the total number of physicians (*1*). This is often a serious impediment to ensuring equal access to basic health services and achieving health system goals (*2*).

Outmigration of physicians and urban–rural maldistribution are some of the most serious challenges facing the Sudanese health sector today. Over 60% of the 21 000 physicians registered with Sudan Medical Council in 2005 have emigrated from Sudan (*3*). Almost three quarters (70%) of those remaining in Sudan are working in major cities, with 64% in the capital, Khartoum (Sudan Federal Ministry of Health, personal communication, 2006).

The World Health Organization (WHO) recommendations on increasing access to health workers in rural and remote areas cover four main areas: education, regulation, financial incentives, and personal and professional support (*4*). These guidelines have been adopted in different settings but without systematic impact evaluation on workforce distribution. Intervention packages adapted to local settings are more likely to be successful than uniform global approaches (*5*). Discrete choice experiments (DCEs) can help to identify the intervention packages best suited to the local context. DCEs are used to assess the stated preferences for goods, services or programmes as a function of their attributes (*6*,*7*). An important strength of DCEs is that they can assess preference for aspects of programmes that have not yet been implemented (*6*,*8*).

This study aimed to determine the preference of junior doctors for rural postings in Sudan, and to estimate how much they are willing to trade off from their salaries for nonmonetary incentives. Through this study, the first of its kind in Sudan, it should be possible to recommend policy options to support retention of physicians in rural postings.

Methods

Study setting

Medical graduates undergo supervised training for one year (houseman/ internship) in recognized hospitals in rural or urban settings, in addition to another year of

civil service to qualify for the medical licensing examination regulated by the Sudan Medical Council. This entitles them to permanent registration at the Sudan Medical Council as physicians. The target population for this study, junior doctors, were physicians sitting the licensing examination at the only two medical licence examination centres in Sudan. These centres receive candidates from across the country, thus rendering them representative of junior doctors in Sudan.

Development of DCE tool

Methods used to develop attributes

Preferred job characteristics (attributes) were obtained through focus group discussions. Seven focus group discussions were run until saturation was reached. Each group comprised an average of six physicians/junior doctors, a facilitator, a note-taker and an observer. Proceedings were audiotaped and later transcribed verbatim. Nine attributes were listed and ranked by the physicians.

A Delphi exercise with > five policy-makers at the Sudanese Ministry of Health was conducted over two rounds to reach consensus over the most relevant and feasible attributes. This was followed by a pilot study among junior doctors to estimate the utility of each attribute. This culminated in a discussion among the researchers and policy-makers resulting in the exclusion of three attributes that showed no significant utility. "Providing school allowances for employee's children" was possibly not valued because private schooling was not available in many rural areas. "Ensuring security in war-zone areas" was only an issue in a few areas, so it would have been irrelevant to the majority of physicians. "Providing postcontract loans to buy land" in rural areas was not of interest to physicians, and this attribute was dropped as it would be logistically difficult to arrange for land in Khartoum. "Housing" did not show statistically significant results; however, the authors chose to keep it since it was a common attribute in all published studies.

The final incentive packages to be used in the DCE included 6 attributes: quality of facility infrastructure; availability of clinical supervisors; salary; length of contract or commitment; scholarship for postgraduate training after completion of contract; and housing. For each attribute, levels were agreed with the policy-makers and physicians. The situation in Khartoum was the ideal reference, and the remaining levels reflected diverse rural situations. Table 1 shows the attributes and levels of the DCE. With regard to the scholarship attribute, policy-makers suggested the inclusion of a level specific to family medicine because there was interest at the Ministry to train family doctors.

DCE questionnaire design

The six attributes produced a full factorial design of 2304 possible alternatives (job postings). The attributes and levels were assorted into a policy-package module using Sawtooth software (*9*). Thirteen choice sets were selected for the DCE per participant using an experimental process that maximized level balance (inclusion of levels in similar proportions) and orthogonality (no correlation between levels of different attributes) and minimized

Table 1 Attributes and levels used in the DCE questionnaire (US$ 1 = SDG 6)

Attributes	Levels
1. Facility	1. Advanced – reliable electricity, available equipment, drugs, supplies, transport 2. Basic – unreliable electricity, equipment, drugs and supplies transport and medication not available
2. Availability of experienced clinical supervisor	1. Always on site 2. Not always on site, but visits site regularly 3. Not on site, reachable through phone only 4. Not available
3. Monthly salary plus financial incentives in SDG	1. 750 2. 1000 3. 1500 4. 2000 5. 3000 6. 4000 7. 5000 8. 6000
4. Duration of commitment to work in health facility (years)	1. 1 2. 2 3. 3
5. Guaranteed full scholarship for postgraduate training after completion of contract	1. Inside Sudan 2. Outside Sudan 3. Family medicine training offered during the commitment years 4. Not available
6. Housing	1. Housing allowance provided 2. Governmental housing provided 3. No allowance nor housing provided

SDG = Sudanese pounds.

overlap among attribute levels within one task – this is known as an efficient design. Respondents were then asked to select their preferred job from each pair of 13 tasks (12 random and one fixed). Figure 1 shows a screen shot for a choice task, translated from Arabic.

The choice in this labelled DCE was between three job posts in a rural health centre, rural hospital, or urban hospital outside Khartoum. There was also an optional opt-out to stay in Khartoum. Participants were instructed to choose this option if they were not attracted by the job descriptions in the scenario. The accompanying survey included questions on demographic characteristics, educational background, international and rural experiences, and future career plans. The DCE and survey were piloted to assess the delivery in the examination setting, face validity and clarity of the tool. Ethical clearance was obtained from the Technical Ethical Committee in the Research Department, Federal Ministry of Health.

Sampling frame

All 570 candidates who took the permanent registration test from 1 September to 31 October 2012 were invited to participate (15.1% of all physicians eligible to sit the examination in 2012).

Data collection

The DCE and associated survey were administered using computer-based, self-completed questionnaires (Table 1). Trained facilitators were available during the process. Before the examination started, the candidates were invited to participate in the study and given instructions on how to complete the questionnaire. Informed written consent was obtained. After conclusion of the three-hour examination, candidates who had consented undertook the DCE and survey using Sawtooth software.

Statistical analysis

Data were cleaned and transferred to Stata version 12. Bivariate analysis was done to test the association between career choices and future plans with individual characteristics. Mixed logit models were fitted to DCE data (Sawtooth Software SMRT version 4.18). All attribute variables were specified as random, except salary, which was fixed in all models. This was to ensure obtaining positive salary values consistent with preferences.

All attribute variables were coded as categorical dummy variables, except salary, which was specified as continuous in all models. Although Bech et al. in 2005 encouraged the use of effects coding in DCEs, there is no recent evidence showing that it is any better (*10*). All mixed logit models were fitted using Stata's mixlogit command, and were specified with 500 Halton draws. To understand how respondents' characteristics influenced job attribute preferences, models that included interactions between characteristics and job attributes were estimated. Subgroup analysis was also done among individuals with no immediate intention to migrate to assess whether this group had different preferences for postings than the group as a whole.

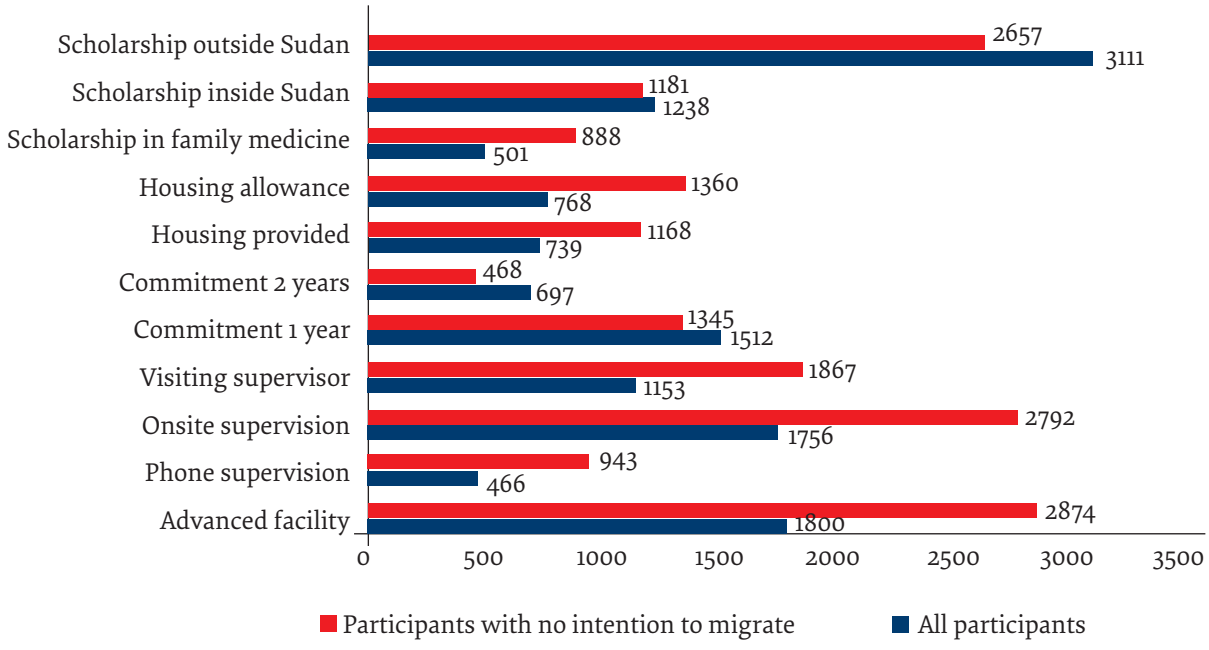
Willingness to pay, the maximum amount a person would be willing to pay, or the amount of compensation

Figure 1 Screenshot of the DCE choice task

If these were the only options available outside Khartoum state, which one would you choose? Click on the respective grey button.

	Urban Hospital	Rural hospital	Rural health centre	Other
Facility set-up	Advanced – reliable electricity, available equipment, drugs, supplies, transport	Basic – Unreliable electricity, equipment, drugs and supplies transport and medication not available	Basic – Unreliable electricity, equipment, drugs and supplies transport and medication not available	I am not interested in any of the before choices if they are out of Khartoum state.
Availability of experienced clinical supervisor	Always on site	Not always on site, but visits site regularly	Not on site, reachable through phone only	
Monthly Salary plus financial incentives in SDG	750	1000	1000	
Duration of commitment to work in health facility (in years)	1	1	3	
Guaranteed full scholarship for postgraduate training after completion of contract	Not available	Not available	Inside Sudan	
Housing	No allowance nor housing provided	Housing allowance provided	No allowance nor housing provided	

Figure 2 **Willingness to pay among all junior doctors compared to those with no intention to migrate within the next two years**



required to give up a unit change in an attribute, was estimated by dividing attribute coefficients by the salary coefficient for each model. Willingness to pay allowed for comparison of attribute utilities among subgroups.

Results

Out of 570 invited physicians, 455 agreed to participate (80% response rate). The mean age of participants was 26 years (standard deviation 1.93, range 22–37 years). General characteristics of participants are shown in Table 2. More than two thirds of the study participants intended to migrate within two years. More graduates from universities based in Khartoum intended to migrate immediately or within 2 years compared to graduates from other universities, albeit a small difference (98% vs. 92% respectively, $\chi^2 = 8.0984$, $P = 0.004$). There was no significant difference by gender ($\chi^2 = 0.5689$, $P = 0.451$).

Preferences for job attributes

The magnitude of the coefficients in Table 3 reflects the magnitude of preference or utility for each attribute against the baseline. All the coefficients were statistically significant, which indicates that the selected attributes were meaningful to respondents. Utilities for rural hospitals and health centres were negative, which showed lower preference for them compared to urban hospitals. Utility for opt-out was positive, which showed that, overall, physicians preferred to stay in Khartoum. Scholarship outside Sudan, advanced facility, on-site supervision and one-year commitment were the most preferred attributes. The least preferred were on-the-telephone supervision followed by a scholarship in family medicine and a two-year commitment to remain in post.

The interaction between women and on-site supervision [$\beta = 0.50$; 95% confidence interval (CI) = 0.24–0.76] and women and on-the-telephone supervision ($\beta = 0.29$; 95% CI = 0.03–0.56) was positive. The interaction was negative between women and scholarship training outside Sudan. The interaction among graduates from universities outside Khartoum, rural background and rural internship was not significant.

Willingness to pay

Providing scholarship training outside Sudan was the most valued attribute, and physicians were willing to sacrifice 3111 Sudanese pounds (SDG) (US$ 519) in monthly salary for this (95% CI = US$ 439–598) (Figure 2). Improving the standards and equipment of health facilities to an advanced level and providing on-site supervision were the next preferred attributes, and physicians were willing to sacrifice SDG 1800 (US$ 300) (95% CI = US$ 232–368) and SDG 1756 (US$ 293) (95% CI = US$ 224–361), respectively, from their salaries for these. This represents an amount much larger than their monthly salary, three times as much, thus demonstrating their eagerness for a supportive learning environment.

Compared with all respondents, those with no intention to migrate showed a greater preference for improved facility equipment and on-site supervision (Figure 2). They were willing to pay SDG 2874 (US$ 479) and SDG 2792 (US$ 465), respectively, for these, compared to SDG 1800 (US$ 300) and SDG 1756 (US$ 293) by all respondents. In contrast, the respondents with no intention to migrate had a lower preference for scholarship training outside Sudan, and were willing to pay SDG 2657 (US$D 443) compared to SDG 3111 (US$ 519) by all respondents.

Discussion

This study shows that the Sudanese health system is faced with a major challenge; namely, that more than two thirds of the study participants intended to emi-

Table 2 **Descriptive statistics for study participants (n = 455)**

Characteristics	n	%
Sex		
Male	189	41.8
Female	263	58.2
Marital status		
Single	316	69.9
Engaged	60	13.3
Divorced	1	0.2
Married	75	16.6
Having children		
Yes	43	9.5
No	408	90.5
Grown up in Sudan		
Yes	301	66.7
No	150	33.3
Area of growing up		
Urban	372	82.5
Rural	79	17.5
Internship place		
Sudan	447	99.33
Outside	3	0.67
Internship in rural areas		
Yes	108	24.2
No	339	75.8
Preference for working in home state		
Yes	233	51.8
No	217	48.2
Intention to migrate		
Yes, immediately	161	35.78
Yes, within two years	132	29.33
Yes, after specialization	57	12.67
Never	13	2.89
Don't know	87	19.33

grate within two years. Even some of those who were not thinking of emigrating any time soon (n = 157, 35%) had an intention to do so after their specialization (n = 57, 36%). This reflects a significant level of attrition and creates an important context when interpreting the results. All participants expressed a high preference for scholarships to train abroad, followed by improvement of health facility standards and provision of on-site supervision. Those with no intention to migrate showed a greater preference for improvement of health facility standards and on-site supervision, followed by training abroad. Surprisingly, both genders had similar intentions to migrate. Sociocultural issues such as spouse and family considerations can play a role in women's decisions. This may have implications that need to be addressed in view of the growing feminization of the health profession in Sudan (Sudan Federal Ministry of Health, personal communication, 2006). In the United Republic of Tanzania, women are less responsive to pecuniary incentives and more concerned with factors that directly allow them to do a good job (*11*).

Sudanese junior doctors valued salary increase. In Thailand, physicians from rural backgrounds were more sensitive than others to a 45% salary increase. In Ethiopia, physicians were more responsive than nurses to salary increases (*12*), while a study of medical students in Ghana showed that a 50% salary increase was almost as highly valued as free superior housing or a utility car (*6*). This suggests that preferences for salary increases are highly context dependent. In Sudan, health-worker salaries are low by comparison to North Africa and even to poorer countries in sub-Saharan Africa. At the time of this study junior doctors in Sudan earned on average SDG 600 (US$ 100) per month. There is large variation in salaries as top-ups are routinely instituted to attract physicians and nurses to states outside Khartoum. These top-ups can amount to three to five or more times the basic salary depending on the rural zone. The current economic crisis in Sudan makes it unlikely that policy-makers can consider competitive salary increases to retain physicians, making this attribute not amenable for policy reform.

The most valued attribute by all participants was obtaining a scholarship for training outside Sudan. Current evidence also supports the implementation of well-defined education policies to redress the inequitable distribution of healthcare professionals to rural areas (*6*,*13*). Scholarship training in family medicine in Sudan was one of the least preferred attributes, even among those with no plans to migrate.

Physicians valued on-site clinical supervision. Lack of supervision may be perceived by physicians as hindering skills and career development and may be an important barrier to rural recruitment. Facility equipment also emerged as an important attribute. It included consistent availability of medicines, water and electricity, especially in health centres. This was similar to findings from the United Republic of Tanzania, where offers of good housing and infrastructure, including provision of equipment, increased recruitment to rural areas, although not as much as higher wages and education did (*11*). During the focus group discussions, physicians expressed concern that their skills would not be of use without appropriate equipment. In larger hospitals, the concern was about inadequate or nonexistent diagnostic equipment, laboratories and other technology. The importance of equipment also emerged from other DCEs (*6*,*11*,*14*,*15*).

A brief one-year commitment to rural areas was preferable to longer postings. In contrast, state health system and hospital managers complained that postings < 3 years are undesirable due to the frequent turnover and loss of experienced physicians. Unlike other DCEs (*6*,*11*,*14*), housing was not detected as an important predictor for job selection, which confirmed the original pilot findings.

Table 3 Mixed logit model results for DCE on attributes influencing junior doctors' stated job preferences (US$ 1 = SDG 6)

Attribute	Coefficient	95% CI	SD	SE
Choices label (% of respondents who selected the option)				
Urban hospital outside Khartoum (33.19)		Reference		
Rural health centre (22.37)	−0.71**	−0.81 to −0.60		0.05
Rural hospital (29.96)	−0.22**	−0.81 to −0.60		0.05
Opt-out (14.48)	1.55**	1.29–1.82		0.10
Salary of SDG 1000	0.33**	0.24–0.32		0
Facility equipment				
Basic facility		Reference		
Advanced facility	0.60**	0.46–0.73	1.16	0.07
Clinical supervision				
No supervisor		Reference		
Visiting supervisor	0.38**	0.26–0.51	0.57	0.07
On-site supervisor	0.58**	0.45–0.72	0.78	0.07
Telephone supervisor	0.16*	0.02–0.29	0.68	0.07
Years of commitment				
3		Reference		
1	0.50**	0.38–0.63	0.93	0.07
2	0.23**	0.13–0.34	0.42	0.05
Housing				
No housing		Reference		
Housing provided	0.25**	0.14–0.35	0.50	0.05
Housing allowance	0.26**	0.14–0.37	0.58	0.06
Scholarship for training				
No scholarship		Reference		
Scholarship outside Sudan	1.04**	0.88–1.19	1.15	0.08
Scholarship inside Sudan	0.41**	0.28–0.55	0.66	0.07
Scholarship in family medicine	0.17*	0.02–0.31	0.79	0.07

Number of participants = 450; number of observations = 21600.

**P < 0.05; **P < 0.000.*

Likelihood ratio $\chi^2(11) = 993.50$; log likelihood = −6027.9257.

DCE = discrete choice experiment; SDG = Sudanese pounds; CI = confidence interval; SD = standard deviation; SE = standard error.

The strengths of this study included the systematic qualitative methodology by which the attributes were developed. The consensus meeting with decision-makers helped to engage policy-makers and gain interest and ownership for research results. The use of labelled choices was another strength, which allowed for assessment of preferences specific to different job situations. This also allowed for more flexibility in the definition of the scenarios proposed and thus made the DCE more policy relevant (*16*).

The study had some limitations. DCEs use brief descriptions of complex attributes. This could affect the external validity of the study because of the possible variation in the interpretation of attributes (*8*). Producing nationally representative data would require larger samples, complex sampling strategies and more resources. However, the sampling technique in this study was sound enough to serve the purpose and the study was sufficiently powered to detect significant findings from the overall coverage of the September/October examination sittings. Generalization of the study may be limited in other countries where financial remuneration is more generous than in Sudan, and indeed this has contributed to the push and pull for physicians intending to emigrate. Although the context varies, we believe that countries in the Middle East and North Africa and WHO Africa Region can benefit from the attributes of the study that can be explored with local junior doctors and tested to inform human resources for health policy. Staffing of public sector health facilities in remote rural areas is a challenge for many ministries of health. There is no strong evidence of interventions addressing the inequitable distribution of healthcare professionals within low-and-middle-income countries, or interventions to reduce migration of healthcare professionals from them (*17–20*). This is further complicated by lack of knowledge about what is the best mix in a bundle of interventions.

What is now needed is more research and further evidence regarding long-term sustainability of a suite of interventions to attract and retain staff in remote areas (*21*). This DCE should be followed by studies that present the preferred package to the target population,

and the uptake of these packages by new graduates should be assessed prospectively. In particular, posting more experienced clinicians to health centres outside Khartoum may be an important draw for physicians.

Conclusions

Sudanese doctors are willing to trade-off substantial parts of their salary for nonmonetary incentives and may consider rural posts if they were made attractive. Authorities may consider improving training, health facility standards and supervision to enhance human resources for health attraction strategies. Addressing the supervision issue may be more feasible for policy-makers in the short term, when compared to improving infrastructure, from a cost perspective.

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Conflicts of interest: None declared.

Encourager les jeunes médecins à travailler en zones rurales au Soudan : une expérience en choix discret

Résumé

Contexte : L'exode des médecins et la répartition déséquilibrée entre zones urbaines et rurales comptent actuellement parmi les difficultés les plus importantes auxquelles se voit confronté le secteur de la santé.

Objectifs : Déterminer le degré de préférence des jeunes médecins en faveur de postes en zones rurales au Soudan et estimer à quel point ils sont prêts à échanger une partie de leurs salaires contre des incitations non monétaires.

Méthodes : L'étude a ciblé des jeunes médecins ayant terminé leur internat et se préparant à l'examen d'homologation en tant que médecin auprès du Conseil des médecins du Soudan afin d'obtenir leur inscription définitive. Des discussions ont été menées en groupes de travail afin de définir des incitations dont la valeur serait susceptible d'être reconnue. Une méthode d'expérimentation des choix, discrète, informatisée et accompagnée d'un questionnaire a été appliquée entre septembre et octobre 2012 dans les deux centres d'examen d'homologation soudanais.

Résultats : Quatre cent cinquante-cinq médecins ont terminé l'enquête. Plus d'un tiers des répondants a déclaré avoir l'intention de quitter immédiatement le Soudan et 30 % de plus prévoyaient de le faire dans les deux années suivantes. Les conclusions ont montré que l'attribution de bourses de formation à l'étranger, l'amélioration des normes des établissements de santé afin d'atteindre un niveau avancé et le contrôle par un médecin responsable sur place constituaient les avantages les plus cités par les répondants ; ces derniers se sont également déclarés prêts à échanger, respectivement, SDG 3650 (608 dollars des États-Unis [USD]), SDG 1997 (USD 333) et SDG 1948 (USD 325) de leurs salaires pour bénéficier de ces avantages. Les avantages les moins populaires étaient les suivants : disponibilité du médecin responsable au téléphone, suivi par une bourse d'étude en médecine générale et engagement de deux ans après la formation.

Conclusions : Les autorités pourraient envisager de tenir compte des choix préférentiels décrits ci-dessus afin de valoriser les stratégies d'attraction vers les zones rurales auprès des ressources humaines. À court terme, les décideurs politiques pourraient éprouver moins de difficultés à traiter le problème du contrôle par des médecins responsables que celui de l'amélioration des salaires et des infrastructures.

تشجيع الأطباء حديثي التخرج على العمل في الأرياف في السودان: تجربة اختيار منفصلة

نازك نورالهدى، أمال بشير، سارة الكوجلي، منى مصطفى، مارجريت كروك، منى عبد العزيز

الخلاصة

الخلفية: تمثل هجرة الأطباء إلى خارج البلاد وسوء توزيعهم بين المناطق الريفية والحضرية أخطر التحديات التي تواجه القطاع الصحي اليوم.

الأهداف: تحديد مدى تفضيل الأطباء حديثي التخرج للعمل في الريف في السودان، وتقدير عدد الأطباء الشباب الذين يرحبون بمقايضة جزء من مرتباتهم مقابل حوافز غير مالية.

طرق البحث: استهدفت الدراسة الأطباء حديثي التخرج الذين أتموا سنة الامتياز، واجتازوا امتحان التراخيص الطبية في المجلس الطبي السوداني للتسجيل الدائم. فأجريت مناقشات ضمن مجموعات بؤرية لتحديد الحوافز التي قد تلقى التقدير لديهم. أجرينا تجربة اعتمدت على الاختيار المنفصل القائم على الحاسوب مع إعطاء استبانة مصاحبة في الفترة بين سبتمبر/ أيلول وأكتوبر/ تشرين الأول ٢٠١٢ في مركزَيْ امتحان الترخيص في السودان.

النتائج: وقد استكمل الاستبانة ٤٥٥ طبيبًا، وتبين أن أكثر من ثلث المستجيبين يعتزمون الهجرة خارج السودان فورًا، وأن ٣٠٪ آخرين منهم يعتزمون الهجرة خارج السودان خلال العامين المقبلين. أظهرت النتائج أن السمات الأكثر تفضيلاً لدى المستجيبين هي تقديم منح دراسية ليتدربوا في الخارج، فهم على استعداد للتنازل عن ٣٦٥٠ جنيهًا سودانيًا (يعادل ٦٠٨ دولارات أمريكية) مقابل ذلك، وتحسين مستوى المرافق الصحية لتصبح ذات مستوى متقدم، فهم على استعداد للتنازل عن ١٩٩٧ جنيهًا سودانيًا (يعادل ٣٣٣ دولارًا أمريكيًا) مقابل ذلك، وتوفير الإشراف في مواقع الخدمة، فهم على استعداد للتنازل عن ١٩٤٨ جنيهًا سودانيًا (يعادل ٣٢٥ دولارًا أمريكيًا) مقابل ذلك. أما السمات الأقل تفضيلاً لديهم فهي توافر المشرف عبر الاتصال الهاتفي، تليها المنحة الدراسية في طب الأسرة، والالتزام بالخدمة لمدة سنتين بعد استكمالهم التدريب.

الاستنتاجات: قد تأخذ السلطات الصحية بعين الاعتبار التفضيلات المذكورة أعلاه لتعزيز استراتيجيات اجتذاب الموارد البشرية من أجل الصحة إلى المناطق الريفية. وقد تصبح معالجة مسألة الإشراف ممكنة أكثر لدى واضعي السياسات على المدى القصير، إذا ما قورنت بتحسين الرواتب والبنية التحتية.

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Human resources for health strategies: the way to achieve universal health coverage in the Islamic Republic of Iran

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Abstract

Background: It is impossible to achieve universal health coverage (UHC) without an adequate, competent and motivated workforce.

Aims: The study aimed to describe how the Iranian health sector has formulated its human resources strategies to achieve UHC.

Methods: This was a qualitative study using a conceptual framework approach to content analysis. Primary data were gathered through expert focused group discussions and document analyses. Both transcribed discussions and the selected documents were analysed using in-depth thematic analysis. A conceptual framework from the Global Health Workforce Alliance was used for content analysis and to draft and develop the strategies. The framework suggested five human resources for health (HRH) pathways to achieve UHC aspects structured according to availability, accessibility, acceptability and quality.

Results: Thirty strategies were formulated for Iranian HRH. Eleven of the developed strategies were related to the field of education and training, such as development of new required academic disciplines; balancing university admissions based on workforce requirements; and enrolling local students from deprived and underserved areas. Ten of the developed strategies were structured under the workforce accessibility dimension.

Conclusions: Strategies for HRH were formulated by adopting a comprehensive, scientific and collaborative approach to ensure alignment with the country's health system priorities and Global Strategy on Human Resources for Health to overcome health workforce challenges.

Keywords: human resources for health, strategy, formulation, universal health coverage, Islamic Republic of Iran

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Introduction

The World Health Organization (WHO) has emphasized that it would be almost impossible to provide universal health coverage (UHC) without an adequate, motivated and professional workforce (*1*). Therefore, health systems have become responsible for attracting, preparing, deploying and retaining highly skilled workforces to provide access to appropriate, timely and effective care, with the aim of achieving UHC goals (*2–6*). Achievement of these goals requires national commitments to develop human resources for health (HRH) strategies.

Although HRH have always been under scrutiny, in most cases, unresolved problems remain due to a fragmented approach to HRH (*7*). Alignment of HRH strategies with health sector policies requires an integrated perspective of the health sector and its components (*8*). Achievement of UHC relies on focusing on HRH as a strategy for health system reform (*9*). In 2008, the Global Health Workforce Alliance (GHWA) initiated global forums on HRH for the first time and called for urgent and sustained action to resolve the critical shortage of health workers around the world. GHWA recognized the health workforce as a high leverage point in service delivery and policy implementation (*10–12*), and created an opportunity to mobilize diverse health stakeholders for the formulation of HRH strategies towards achieving UHC. These forums provided the groundwork for reaching a global HRH strategy by 2030. At the third forum in 2013 in Recife, Brazil, GHWA suggested a model that was an advocacy instrument to facilitate policy dialogue for mapping the most effective and evidence-informed HRH strategies and their interrelatedness. The GHWA model included 2 parts. First, a UHC framework of availability, accessibility, acceptability and quality (AAAQ) that acts as a bridge between HRH actions and UHC to ensure vertical integration of HRH strategies. The AAAQ concept was initiated by WHO in the 1960s to evaluate health system performance (*13*). Second, there were 5 coordinated pathways of HRH: education; skills mix; health labour markets; incentives and retention; and cross-cutting actions. These pathways mean that stand-alone interventions would not be effective and they should be integrated horizontally. For

example, employing a new, competent workforce needs to be in conjunction with its motivation and development strategies.

However, it is essential in the GHWA model to define appropriate HRH strategies based on the recommended HRH pathways to reach the intended targets of UHC. Figure 1 shows this model briefly (*14–16*), illustrating its AAAQ aspects. It shows that some vertical and horizontal elements are compulsory to generate integration among the strategies (*17*). This model is globally accepted by 57 national governments, mostly from low- and middle-income countries, which have formed their strategies based on the model (*18*).

Development of HRH strategies in the Islamic Republic of Iran does not have a long history. A strategic plan for HRH was developed for the first time in 2003 by the Iranian Ministry of Health and Medical Education (MOHME) (*19*); however, it had little relevance to the health system goals. Subsequently, in 2010 and 2011, several projects analysed upstream national documents and extracted HRH-related themes in order to identify the principle directions and challenges (*20*). In 2012, HRH strategies were developed in line with the Iranian health system reform plan. Unfortunately, these strategies were not implemented successfully due to lack of advocacy among different levels and lack of a systematic evaluation framework (*8*). The present study aimed to show how recent Iranian HRH strategies were developed for the Third Global Forum on Human Resources for Health in Recife, 2013.

Methods

This was a qualitative study that used a conceptual framework approach to content analysis to investigate formulating HRH strategies in the Islamic Republic of Iran). The framework used in this study was the GHWA model. To start, two major sources of evidence were used: expert focused group discussions (FGDs) and document review. Multiple sources of data allowed access to a broader range of inputs for producing valid results (*21*).

For FGDs, purposeful sampling was used to select external and internal stakeholders in the Iranian MOHME (*22,23*). The participants were invited through an official letter that explained the purpose, goals and stages of the study (Table 1). Three face-to-face FGDs were facilitated by two of the researchers (Table 2). FGDs guided by the adopted WHO conceptual framework and the participants' views about HRH issues were discussed during the sessions. Field notes made during the FGDs and all discussions were audiotaped and transcribed for analysis. The FGDs lasted an average of three hours. After each session, the topics were summarized and the results were presented to the participants at the beginning of the next FDG. The discussion output after the second FGD was sent to the participants in a textual form and their final comments were received.

Another source of data was analysis of documents. All national policy documents were identified and evaluated for relevancy by two researchers (Table 2). In this phase, eight technical documents were selected and each was carefully and independently reviewed by two researchers

Figure 1 Reaching health system goals and universal health coverage by availability, accessibility, acceptability and quality, and human resources for health pathways (17).

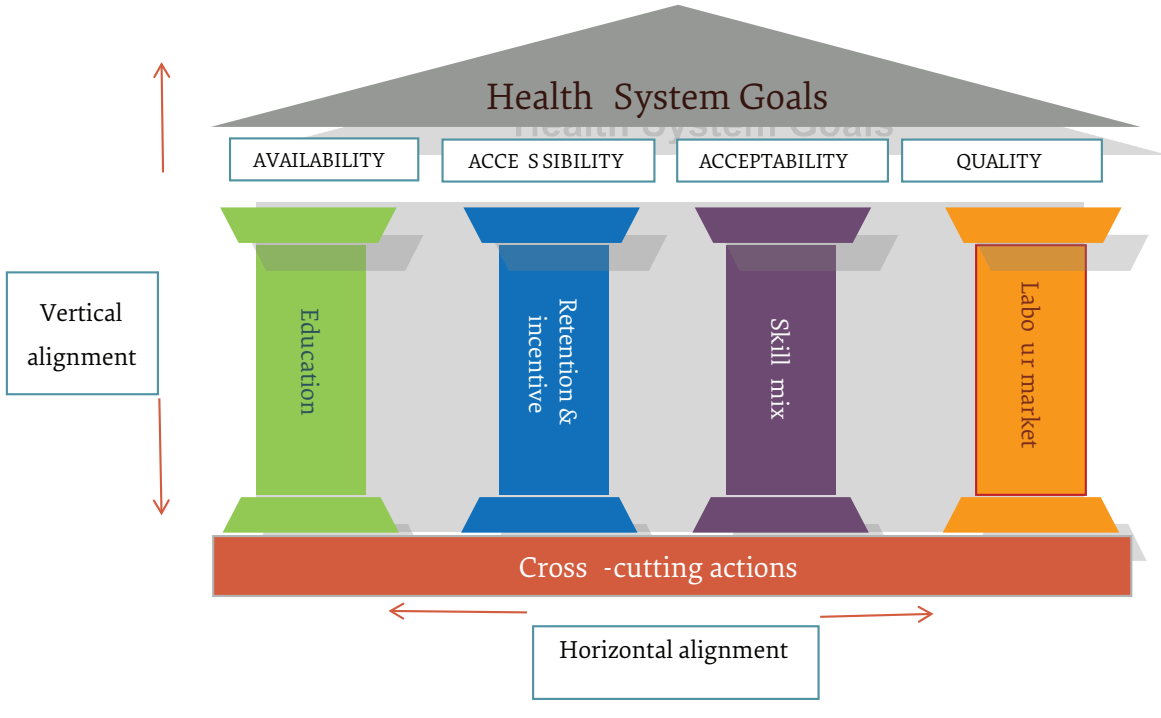


Table 1 Characteristics of participants in focus group discussions (FGDs)

No.	Sex	Occupation	Affiliation	Credentials
1	Male	HRM expert	Individual	PhD
2	Female	HRM expert	Individual	MS
3	Female	HRM expert	Individual	MS
4	Male	HRM expert	Individual	PhD
5	Female	HRM expert	Individual	PhD
6	Male	HRM expert	Individual	MS
7	Female	Technical expert	MoH	BA
8	Male	Technical expert	MoH	MS
9	Male	Technical expert	MoH	MS
10	Female	Technical expert	MoH	MS
11	Female	Technical expert	MoH	GP
12	Male	Technical expert	MoH	PhD
13	Male	Technical expert	MoH	BA
14	Female	Technical expert	MoH	MS
15	Female	Technical expert	MoH	GP
16	Female	Technical expert	MoH	MA
17	Male	HR manager	Gilan University	MS
18	Male	HR manager	Tehran University	PhD
19	Male	HR manager	Zanjan University	MS
20	Female	HR manager	Mazandaran University	MS
21	Male	HR manager	Iran University	PhD
22	Male	HR manager	Isfahan University	MS
23	Male	HR manager	Tabriz university	PhD
24	Male	HR manager	Rafsanjan university	GP
25	Male	HR manager	Zahedan university	MS
26	Male	Deputy Minister	MoH	Medical specialist
27	Male	Deputy Minister	MoH	PhD
28	Male	Director	Tehran Emergency Center	Medical specialist
29	Male	Director	Iranian Blood Transfusion Organization	PhD

Abbreviations: GP = General Practitioner; HRM = Human Resources Management; MoH = Ministry of Health

Table 2 Personal characteristics of researchers and facilitators

No.	Sex	Credentials	Occupation	Experience or training	Role in FGD and coding
1	Male	PhD	HRM expert at MoH	27 years of experience in HR	Document analyzing
2	Female	PhD candidate	HRM expert at MoH	15 years of experience in HR	Facilitator of FGs
3	Female	PhD candidate	HRM expert at MoH	13 years of experience in HR	Facilitator of FGs
4	Female	PhD candidate	HRM expert at MoH	12 years of experience in HR	Data coder
5	Male	PhD candidate	HRM expert at MoH	4 years of experience in HR	Data coder
6	Female	MS	HRM expert at MoH	3 years of experience in HR	Document analysis

Abbreviations: FGD = Focus Group Discussion; HRM = Human Resources Management; MoH = Ministry of Health.

to assure the quality.

The transcribed FDGs, with final corrections based on comments, and selected documents were analysed by two researchers (Table 2) using an in-depth framework method for content analysis by MAXQDA version 10 (qualitative data analysis software). For analysis, after transcription and familiarization with the whole content, we applied the conceptual framework of the study as a coding system for indexing transcripts and then charted the extracted codes and categories into the matrix of the AAAQ and HRH pathways. This analysis method also concurred with the components of the conceptual framework (WHO systematic template of AAAQ and HRH pathways). To verify the trustworthiness of the results, we used peer debriefing as well as member-checking by at least two members of the research team at each step. The FGDs provided in-depth methodological descriptions for the participants and all topics discussed were carefully documented. The analysis revealed 40 strategies (codes) from which 30 were confirmed through the third FGD session with the selected participants (Figure 2).

Results

We identified 30 themes through the multiple-methods approach according to the five HRH pathways structured by AAAQ. The themes were organized into the model by allocating 11 strategies in education, 5 in retention and incentives, five in skill mix, four in labour markets pathways and five in cross-cutting actions. A review of the strategies showed that they also properly fitted into the AAAQ structure aiming to achieve UHC. In terms of AAAQ structure, four strategies fitted in availability, 10 in accessibility, six in acceptability and 5 in quality (Figure 3). Colour codes presented in Figure 3 shows how each of the developed strategies related to the AAAQ aspects.

Strategies in the education pathway indicated that new academic disciplines required to be developed, and university admissions should be mostly from local students of deprived and underserved areas. Besides, the entries must be based on workforce status that is defined by workforce shortage, balance and excess. It is necessary to provide the financial resources and other supports to ensure local recruitment and essential training to upgrade knowledge and skills among frontline health workers. To estimate the required resources for training and consequent allocation in annual operating budgets, the per capita method was useful to calculate required funds to train the workforce. With regard to workforce provision in underserved areas, legal obligations of education in medical disciplines were proposed to recruit medical specialists and general practitioners to work in required areas.

Figure 2 Human resources for health (HRH) strategies formulation process

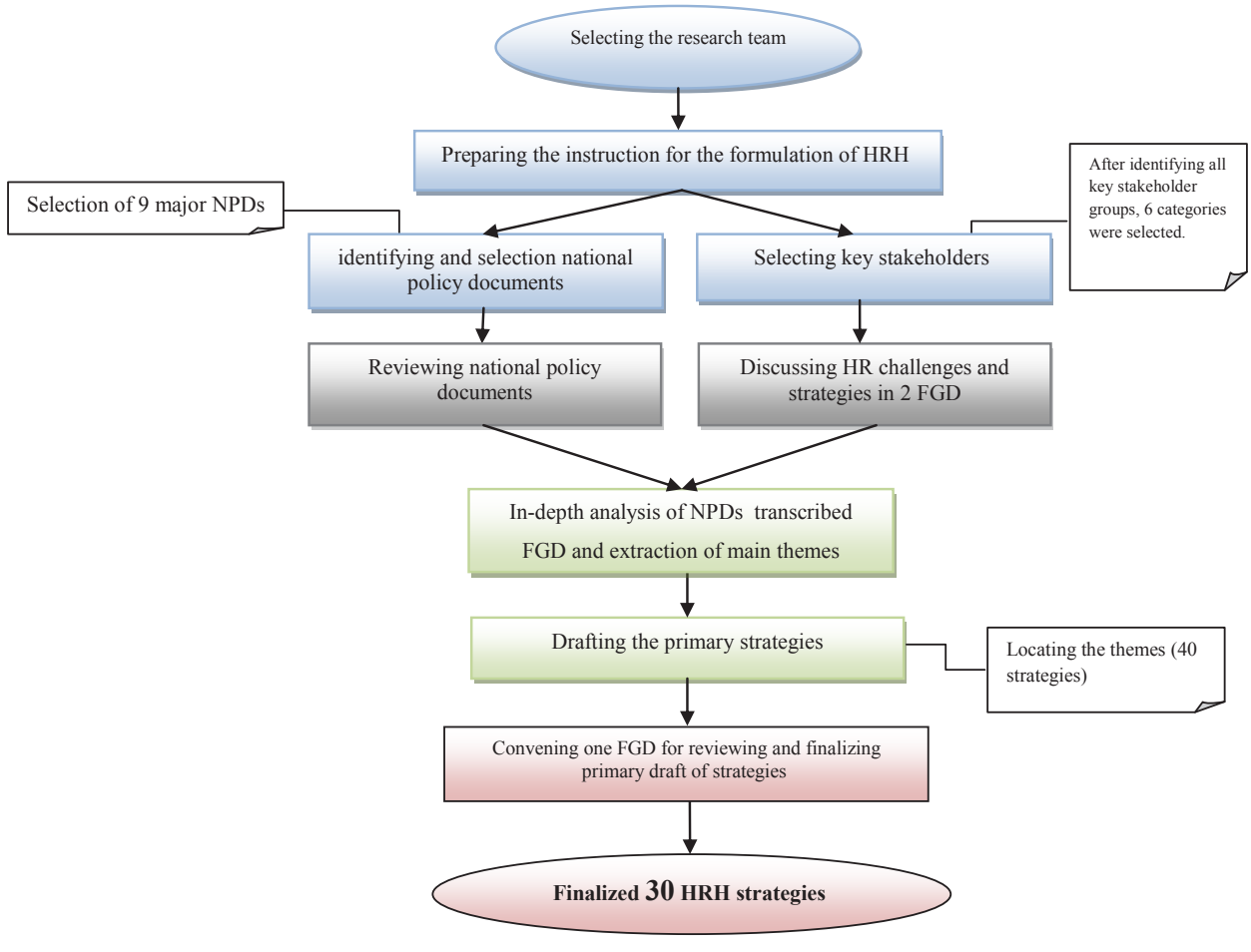
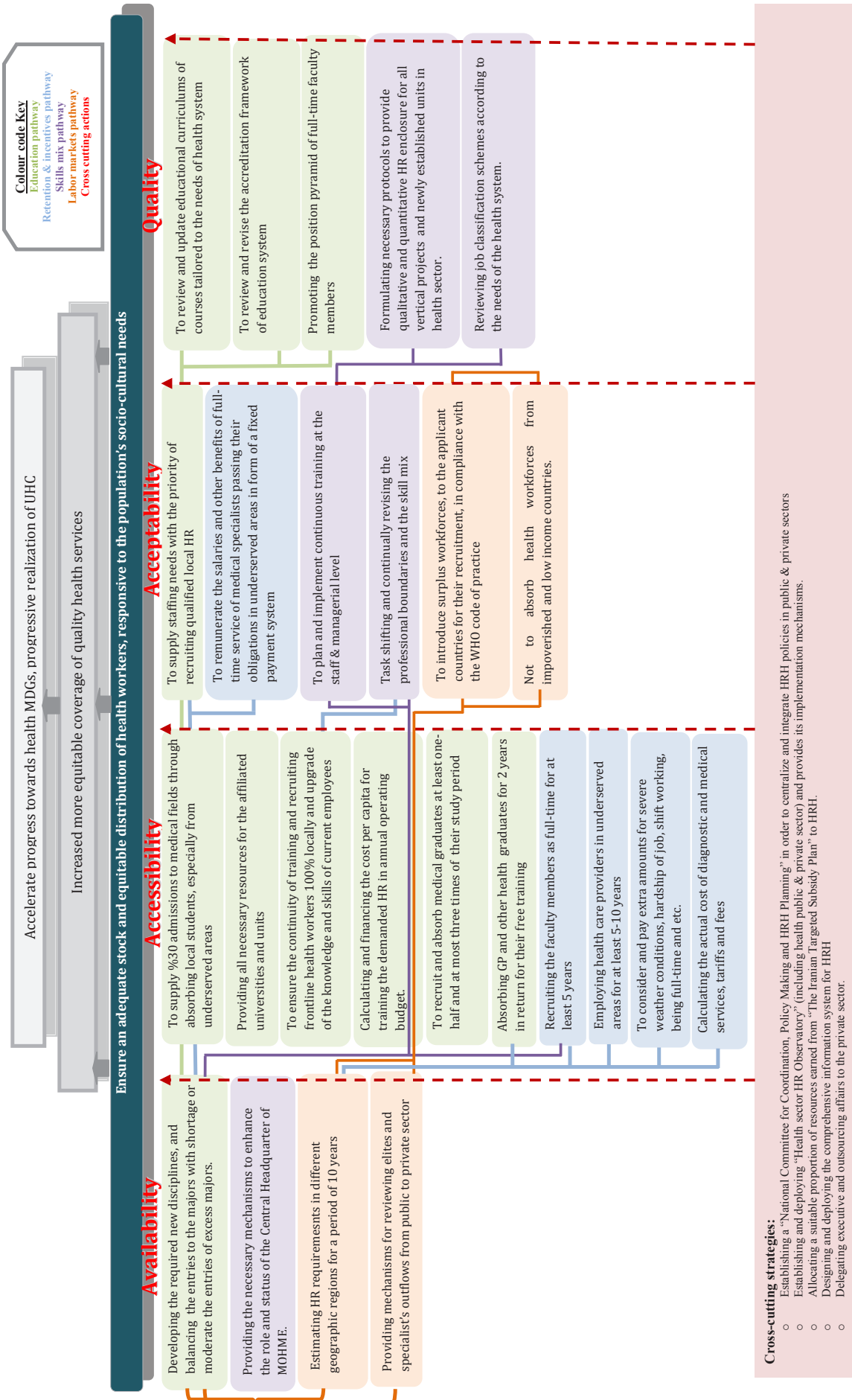


Figure 3 **Iran's HRH strategies**



To improve retention and incentives, the findings suggested that we should recruit university faculty members with a full-time contract for at least five years and to employ other providers in underserved areas for five to ten years. Since the deprived areas suffer from severe weather conditions, incentive packages should be developed to include extra payments addressing the unpleasant weather, hardship of the job, working in shifts, and being a full-time employee. Moreover, the actual cost of diagnostic and medical treatment must be recalculated to reach authentic medical tariffs and service fees for medical specialists. For the skill mix pathway, the strategies identified continuous training as an important factor to improve competencies of both the staff and managers. With growing interest in interprofessional practice, the strategies suggested task shifting and revision in professional boundaries and skill mix, as well as a review of job classification schemes indicating the needs of the health system. It appears to be essential to develop HR attachment protocols for all vertical health projects.

Labour market strategies mainly addressed estimation of health workforce requirements for a period of 10 years. The workforce midterm plan will show the health system demand and surplus of medical and paramedical workforces that could be introduced to other countries on demand. Ethically, the strategies promoted should not recruit from impoverished and low-income countries, in accordance with the WHO Global Code of Practice on the International Recruitment of Health Personnel. New mechanisms are required to review the outflow of elite and specialist workers from the public to private sector.

Cross-cutting strategies sought integration of public and private sector HRH policy-making and planning. Strategies urged delegation and outsourcing of executive affairs to the private sector. The strategies also found that this integration requires establishing a national committee and deploying an HRH observatory. In addition, a suitable proportion of the Iranian Targeted Subsidy Plan should be allocated to the HRH plans. However, the main prerequisite would be design and development of a comprehensive HRH information system.

Discussion

This study showed how the Islamic Republic of Iran developed its health workforce strategies for applying the comprehensive framework provided by the GHWA. This framework had the advantage of previous advocacy in the Islamic Republic of Iran due to its preparation for the Third HRH Forum in Recife, and it was considered acceptable and comprehensible for the further contribution of the stakeholders. This model created cohesion among Iranian strategies, because it used a systematic approach that clarified and covered performance gaps of current HRH (*8*).

In terms of the content of developed strategies, the focus was primarily on the accessibility, acceptability and quality of the services provided by HR, rather than the availability of workforces. The main challenge of HR management in the Islamic Republic of Iran has been retention and maintenance of the health workforce, especially in deprived and underserved areas, and this has significantly affected accessibility to health services (*8*). This is consistent with Indonesian HRH policies struggling with the issue of accessibility to health workers as one of the major challenges facing the country (*24*).

To improve equal access to health workers, the main strategic focus was on local recruitment and retention of the workforce. For example, Behvarz (rural health workers), only recruited locally. For this purpose, local applicants are admitted to Behvarzy high schools as students, and after two years of education and training, they are permanently recruited as Behvarz. Behvarz continuously improve their knowledge and professional skills through follow-up and continuous in-service training. This is specifically in line with global HRH milestones for 2030 to reduce inequalities in access to health workers (*17*). Other countries have recognized this issue and have devised policies to train, recruit and retain their community health workers (*18*).

In the Islamic Republic of Iran, most problems of health workforce retention are related to physicians, especially specialists in underserved regions, due to lack of facilities and living conditions. For this reason, retention strategies are oriented towards compulsory service in underserved areas, and rationalization of health service tariffs and remuneration. Similarly, in Sudan HRH strategies are focused on loss of physicians due to migration (*24*). The Global HRH Strategy 2030 confirms these trends and suggests that countries should regulate working conditions and operations in all health-related sectors, and implement motivational measures to achieve national alignment with public sector health goals (*25*).

The present study showed development of policies to recruit local students, especially those from deprived areas, based on particular provincial needs. The Global HRH Strategy 2030 also suggests aligning educational investment with future government policies for local employment and adopting innovative financial packages as incentives for retention. It also recommends applying cost-effective methods to harness different health cadres and skill mixes (*25*,*26*).

To promote workforce availability while considering the dynamic nature of HRH needs and changes in national policies, the strategies in the present study focused on establishing new required disciplines, long-term workforce planning and retaining elite workers in the public health system (*16*). Most countries struggle to achieve their health system goals (*27*), and find health workforce planning problematic in terms of balancing supply and demand in the health workforce (*28*).

In the acceptability measure, the HRH strategies discussed provision of acceptable services by an acceptable workforce in an acceptable way. Therefore, the strategies considered staffing by competent workers, training and

empowerment of staff, and revision of the professional boundaries and skill mix. Organisation for Economic Co-operation and Development countries also have policies such as team-based training and problem-based learning to promote current skills of different health professionals (*29*). Changing professional boundaries is an innovative strategy by which the Iranian health system could improve its workforce skill mix and meet the growing workforce demand and anticipated shortage of health workers (*30*). Other aspects of acceptability that were not considered in this study include gender, age, culture and dialect of the health workforce (*31*).

Although the workforce plays the most important role in delivering health services, their knowledge and competency are not regularly updated or they remain inadequate because they have not improved consistently with the development of knowledge, technology and other changes such as demographic characteristics and disease patterns (*32*). These problems have been considered by revising curricula and job classifications, and establishing accreditation strategies. In this regards, one study has strongly recommended that all countries move towards aligning accreditation, licensing and certification of education systems with UHC goals (*32*).

The cross-cutting strategies for the Islamic Republic of Iran, such as the necessity for reinforcing information systems or financial investment, are similar to the HRH policies in other middle and low-income countries with common HR challenges (*9,18*). The cross-cutting strategies include design and deployment of a comprehensive HRH information system that covers the whole heath labour market and produces a standardized health workforce information system. Likewise, the Global HRH Strategy 2030 has a particular focus on enhancing HRH information systems for advanced analysis and strength of capacities for communication to policy-makers. Additionally, outsourcing and delegating executive and administrative tasks to the private sector is the main strategy to reinforce the private sector while preserving government authority.

Overall, the first step to achieve UHC is to provide the required health workforce. Essential interventions to ensure HRH availability have been implemented in the Islamic Republic of Iran; therefore, the current national policies and priorities of the health sector have focused on accessibility strategies.

The present study had some limitations. It was not possible to consider all feasible alternatives that could overcome the current challenges; therefore, there may have been limitations in the comprehensiveness of the developed strategies. To overcome this limitation, we used information from multiple sources to devise the most appropriate strategies. Moreover, since group discussions can be difficult to steer and control, we tried to decrease these limitations by balancing the diversity of the participants based on expertise and organizational position. Furthermore, identification of the right stakeholders might have been biased and it was possible that we missed some valuable experts to invite to FGDs.

Conclusion

Iranian HRH policies appear to be well aligned with the UHC goals, at least in principle. Measurement of the effectiveness of these strategies requires full implementation and evaluation of results, which will be examined in future studies. To align with global health goals, every country should engage critical stakeholders, including government, professional bodies, and academics to formulate appropriate strategies to overcome HRH challenges. Deep identification of national conditions and prerequisites such as historical, economic and political context, health needs, rules and regulations are essential to an evidence-based policy-making process. Such a process can recognize transformative actions and address existing gaps in HRH. However, for the best-written strategies to reach their targets needs sustainable funding, long-term governmental vision, political commitment, and accountability.

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Competing interests: None declared.

La perception des besoins par les personnels de soins de santé au Liban : un pas en avant vers une planification éclairée des ressources humaines et du développement professionnel

Résumé

Contexte : Des recherches ont déjà été menées dans plusieurs pays au regard des compétences requises pour gérer de façon efficace les organismes de soins de santé. Pourtant, peu de données sont disponibles concernant les compétences et les domaines de connaissances qui font actuellement défaut parmi les personnels de soins de santé travaillant dans des environnements disposant de ressources limitées.

Objectif : L'objectif de la présente étude était d'évaluer la perception des besoins par les personnels de soins de santé au Liban.

Méthodes : Nous avons mené une étude exploratoire suivant la méthode de Delphi, faisant intervenir deux comités de professionnels de soins de santé et comportant une enquête nationale menée auprès de directeurs d'établissements hospitaliers afin d'évaluer les compétences nécessaires et les métiers et spécialités faisant défaut dans le secteur des soins de santé.

Résultats : Les cinq principaux domaines où se fait sentir le besoin en compétences et en connaissances sont les suivants : le professionnalisme, la gestion fondée sur des données probantes, la planification stratégique, la gestion et l'amélioration de la qualité et les compétences en communication. La gestion et la technologie de l'information ont été mises en avant dans les hôpitaux urbains ainsi que par les deux comités de professionnels. Les professionnels de soins de santé se sont déclarés prêts à suivre des cours de formation continue. Les hôpitaux ont indiqué la disponibilité de moyens financiers et leur volonté de collaborer avec les établissements d'enseignement afin de faire bénéficier leur personnel de formations et de sessions d'éducation continue.

Conclusion : Nos résultats préparent le terrain pour des recherches futures portant sur les problèmes des personnels de soins de santé au Liban et parlent en faveur d'une planification des ressources humaines fondée sur des données probantes. Ils pourraient éclairer l'élaboration de politiques nationales et locales dans le pays, capables de répondre aux besoins en ressources humaines du système de soins de santé en vue de satisfaire la demande aux niveaux régional et national. Les universités, les syndicats de professionnels et les organisations non gouvernementales pourraient exploiter ces résultats afin d'élaborer des programmes de formation continue et des programmes diplômants intégrant les compétences essentielles requises pour les personnels de soins de santé.

استراتيجيات الموارد البشرية الصحية: السبيل إلى تحقيق التغطية الصحية الشاملة في جمهورية إيران الإسلامية

غلام حسين صالحي زلاني، رقية خليل نزاد، الميرا ميربهاء الدين، آزاد شكري، طاهرة كشكلاني، محبوبة بيات

الخلاصة

الخلفية: من المستحيل تحقيق تغطية صحية شاملة دون وجود قوى عاملة كافية ومُؤهَّلة ومُتحمِّسة.

الهدف: وصف الكيفية التي صاغ بها قطاع الصحة الإيراني استراتيجيات موارده البشرية لتحقيق التغطية الصحية الشاملة.

طرق البحث: كانت هذه دراسة نوعية باستخدام نهج إطار مفاهيمي لتحليل المحتوى. وجُمعت البيانات الأولية من خلال مناقشات جماعية مُركَّزة بين الخبراء وتحليلات للوثائق. وخضع للتحليل كلٌّ من المناقشات المُدوَّنة والوثائق المُختارة، وذلك باستخدام تحليل مواضيعي متعمق. واستُخدم إطار مفاهيمي من التحالف العالمي للقوى العاملة الصحية من أجل تحليل المحتوى ولصياغة الاستراتيجيات وإعدادها. واقترح هذا الإطار ٥ مسارات للموارد البشرية الصحية من أجل تحقيق جوانب التغطية الصحية الشاملة التي نُظِّمت وفقاً للتوافر، وإمكانية الوصول، والمقبولية، والجودة.

النتائج: وُضعت ثلاثون استراتيجية للموارد البشرية الصحية الإيرانية. وكانت إحدى عشر استراتيجية منها تتعلق بمجال التعليم والتدريب، مثل استحداث تَخصصات أكاديمية مطلوبة، وتحقيق التوازن في عمليات القبول بالجامعات على أساس الاحتياجات من القوى العاملة، وإلحاق طلاب محليين من المناطق المحرومة والمناطق التي تعاني من نقص الخدمات. وأُدرِجت عشرٌ من هذه الاستراتيجيات المُوضوعة ضمن الجانب الخاص بإمكانية الوصول إلى القوى العاملة.

الاستنتاجات: وُضِعت استراتيجيات للموارد البشرية الصحية عن طريق اتباع نهج شامل وعلمي وتعاوني لضمان التوافق مع أولويات النظام الصحي في البلد ومع الاستراتيجية العالمية بشأن الموارد البشرية الصحية للتغلب على تحديات القوى العاملة الصحية.

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Perceived healthcare workforce needs in Lebanon: a step towards informed human resources planning and professional development

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Abstract

Background: Research in various countries has previously investigated the competencies required for effective management of health care organizations. Yet, limited information is available on the skills and knowledge areas, which are currently lacking among the healthcare workforce employed in environments with limited resources.

Aims: The aim of this study was to assess the perceived healthcare workforce needs at the management and clinical/practice levels in Lebanon.

Methods: We conducted an exploratory Delphi study involving two panels of health care professionals and a nationwide survey of hospital directors to assess the skills needed and the healthcare occupations and specialties that are limited.

Results: Based on the Delphi study, the top five needed skills/knowledge areas were: professionalism, ethics, quality management and improvement, strategic planning, and communication. The need for information management and technology skills was reported by more than 50% of urban hospitals, and highlighted by the two panels in the Delphi study. Healthcare professionals reported willingness to take continuing education courses. Hospitals further indicated the availability of financial support and willingness to collaborate with educational institutions for employee training and continuing education.

Conclusions: Our findings set the ground for future research investigating healthcare workforce issues in Lebanon and support evidence-based planning for health human resources. They may inform the development of national and local policies in the country, which address the human resources needs of the health care system to meet regional and national demands. Universities, professional syndicates, and nongovernmental organizations may leverage these findings to develop continuing education training and diplomas incorporating the competencies critical for the healthcare workforce.

Keywords: Delphi; survey; hospitals; human resources; planning

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Introduction

Previous research has investigated the competencies required for effective health care workers and managers (*1–5*). Although authors varied in their definition of competency (*1*), they agreed that it represents the level of skills and knowledge that can be measured against standards and improved by training and development for optimal job performance (*6–8*).

Competencies are referred to as knowledge, skills and abilities necessary for meeting the changing business and health care needs, and for successful management of health care organizations (*1,3*). They are context-dependent and should be assessed taking into consideration the critical issues in a health care system and the cultural characteristics of that environment (*1,8*). It is expected that managers and health professionals combine business practices with clinical and health care knowledge to lead their organizations and contribute to the improvement of their health care system (*3,8,9*).

Understanding the health care workforce needs is essential for professional development, and for aligning the development at the individual level with the needs of a specific organization or profession (*10*). In 2005, the World Health Organization (WHO) recommended that future training of the health care workforce incorporate a new set of competencies (e.g., quality improvement, information and communication technology, etc.) to support health workers in managing the most prevalent problems of the 21st century (*2*). More recently, WHO called health professionals' education and training institutions to implement continuous development programmes and use adapted training curricula that address timely challenges and the evolving needs of their communities (*11*). Yet, knowledge about the specific needs of the health care workforce in various health care systems in resource-constrained environments, including Lebanon, remains limited.

The health care system in Lebanon has been facing challenges and uncertainties (*12*), which have put significant pressure on health care professionals and organizations. Lebanon has 28 public and 134 private

hospitals (*13*), various nongovernmental organizations and dispensaries targeting primary health care in underprivileged regions (*14*), and other entities catering mostly towards the provision of curative care (*15*). As of 2013, the distribution of health professionals per 10 000 citizens was 31.9 physicians, 33.1 nurses and midwives, and 16.8 dentists (*16*). Although the health care sector is partly funded by 7 public schemes (*13,17*), services are mostly paid for out-of-pocket or through private health insurance. The system is largely dominated by the private sector (*13,18*), which remains highly unregulated (*19*).

A major concern in Lebanon is the absence of a national health policy on human resources and the lack of a long-term strategy regulating the recruitment and distribution of health care professionals. A significant brain drain has been observed historically, especially for the nursing profession, with the migration of nurses for better conditions and pay (*20*). The main challenges facing the health care workforce in Lebanon include imbalanced professional and geographic distribution of providers/institutions, lack of relicensing of health professionals or accreditation of curricula, and limited continuing education programmes and career development (*21*).

A quick search of the literature and online resources shows very limited resources available for continuing education in Lebanon. With the exception of information available online on continuing education centres and divisions in various universities in the country, only two studies discussed continuing education and professional development in relation to the health care workforce. One study showed that nurses in Lebanon attend insufficient continuing education sessions per year (*22*). More recently, Alameddine et al. investigated factors associated with staff retention at primary health care centres in Lebanon, and reported that among the top three reasons behind the likelihood to quit is the lack of professional development, reported by around one-third of surveyed providers (*23*).

This article contributes to this under-researched area and explores the perceived health care workforce needs (at the management and clinical/practice levels), which may inform future efforts for professional development and human resources planning. Specifically, a 2-stage project, including a Delphi exploratory survey of health care professionals and a nationwide survey of hospitals, was conducted to identify the skills needed by the health care workforce in Lebanon today and the health care occupations and medical specialties that are in short supply in the country.

Methods

Exploratory stage: a qualitative Delphi evaluation

We conducted an exploratory Delphi survey to uncover the health care professionals' perspectives of the workforce skills needs in Lebanon (Table 1). Since no prior research has been done in this area, it was necessary to start with an exploratory assessment. The Delphi method is a valuable data-driven approach that is often used in exploratory studies when evidence on a topic or question is scarce (*24*). It usually consists of a 3-phase data collection approach (brainstorming, narrowing down, and ranking), which employs a set of linked questionnaires eliciting the opinion of panels of experts in a certain field through iterative feedback (*25*).

In order to ensure the representativeness of different groups of practitioners, two panels of experts were invited to participate in the Delphi part of the project; one panel included allied health care professionals (i.e., non-medical health professionals) and the second panel consisted of physicians. A convenient sample of panellists within each group was recruited with the intention to have as much representation as possible of various stakeholders within each group (e.g. area of specialization, employment).

At the beginning of the project, we intended to recruit 18 participants in each group in order to account for potential attrition over the three rounds. Hence, we attempted to reach out to 18 physicians and 18 allied professionals in the community. However, we were not

Table 1 Delphi study phases

Phase 1. Brainstorming
Five most important skills/knowledge areas in the field of health care administration/management were solicited from practicing health care professionals
Two panels of respondents recruited: physicians & allied health care professionals
11 physicians and 11 allied professionals completed Phase 1
A total of 80 skills/knowledge areas were identified by the 2 panels
Final combined list consisted of 21 unique skills/knowledge areas after removing duplicates and merging similar issues
Phase 2. Narrowing down
The two panels (nine physicians and 10 allied professionals) pared the list down
Panellists selected 10 skills/knowledge areas that they perceived as most needed
Issues identified by at least half of each panel were retained
Total of 16 skills/knowledge areas were retained by both panels
Phase 3. Ranking
The two panels separately produced a ranked list of needed skills/knowledge areas (9 physicians and 9 allied professionals)
Degree of consensus was calculated using Kendall's coefficient of concordance (W)
Fair level of consensus was reached within each panel (W = 0.37 for the physicians panel; W = 0.33 for the allied professionals panel)

able to reach some of them despite multiple attempts. Subsequently, we successfully communicated with 15 allied professionals and 14 physicians who were invited to participate in the Delphi project; details about the three rounds were shared with them. 14 allied professionals and 13 physicians agreed to participate. Among these, 11 participants in each panel answered the first round, representing an 81% response rate.

Data collection from the two panels was conducted over a period of five months by e-mail, which is an approach that has been used in Delphi surveys as it allows flexibility and supports timely responses. In Phase 1, brainstorming, the panellists received the first questionnaire asking them to identify five most critical skills and/or knowledge areas that are needed, and expected to be in need, over the next three years. They were also asked to provide a brief definition of the skills that they presented. Responses were reconciled after removing duplicates and grouping similar answers.

In Phase 2, narrowing down, the consolidated list of skills/knowledge areas generated in Phase 1 was randomly ordered and sent back to the panellists for validation. The respondents were asked to select from this list the 10 skills/knowledge areas that they consider most needed. General questions related to the profile of the participants were also included.

In Phase 3, the experts received the random list of skills/knowledge areas that were retained by at least 50% of the two panels in Phase 2, and were asked to order them from the most to the least needed. Kendall coefficient of concordance (W) was calculated to determine the level of consensus between participants in each panel.

Hospital administrators' survey

The survey component aimed to provide an overview of the perspectives of hospital administrators/chief executive officers regarding the current health care workforce needs in Lebanon. Given the relatively small number of public hospitals in Lebanon and the limited information available on them, the survey targeted private hospitals, which are considered the "backbone" of the healthcare system in Lebanon (*13*). The Syndicate of Private Hospitals in Lebanon, which represent more than 75% of hospitals endorsed the survey; the questionnaire was reviewed by its board, and the centralized list of hospitals available at the syndicate was used for data collection.

The results of the exploratory stage of the project were used for the development of the questionnaire, combined with evidence from similar studies in the literature in other contexts. The questionnaire included closed-ended questions that assessed the need for 15 management skills and 9 clinical/practice skills among the health care workforce in hospitals. It also investigated the extent to which 12 health care professions and 10 medical specialties are currently needed in hospitals, and examined the training resources that would best meet the skill needs of the health care workforce.

The questionnaire was distributed to 134 hospitals in Lebanon; copies were both e-mailed and faxed as per common practice/procedure for surveys involving hospitals with the Syndicate. Data collection took place over a period of three months, July–September 2014, and a reminder was sent half-way through. A total of 33 hospitals completed the survey, a 25% response rate. Descriptive data through analyses were performed to provide an overview of the health care workforce skills and occupations needed by hospitals in Lebanon, the available training resources and options, and the financial support for continuing education.

Results

Exploratory Delphi evaluation

The participants in the Delphi component of the project were mostly women aged 30–50 years, who had considerable years of experience (Table 2). The majority of allied professionals held a Master's degree in various areas of specialization, including nursing, osteopathy, pharmacy and management. The panel of physicians was also diverse and included various specialties. More than 50% of the panellists were employed in private hospitals and all participants reported having taken continuing education courses and would consider doing so in the future.

In total, 80 skills/knowledge areas were identified by the two panels in Phase 1. The responses were consolidated, producing a final list of 21 unique skills/knowledge areas (Table 3). Eleven of these were overlapping between the two panels (Table 4).

The consolidated list was randomly ordered and sent back to the two panels for narrowing down (Phase 2). Overall, 16 skills were retained as they were selected by at least 50% of either of panel. Eleven out of the 16 were identified by more than 50% of participants in both panels (Table 4), of which 7 were also identified by both panels in Phase 1: information and communication technology; ethics in health care delivery; quality management and improvement in health care; financial health care management; inter-professional collaboration and teamwork; communication skills; and professionalism.

In Phase 3, the panellists were asked to rank the random list of 16 skills/knowledge areas retained from phase 2. The level of agreement was "fair" for both panels: W = 0.37 for the physicians; W = 0.33 for the allied professionals. The ranking further confirmed the similarities between the panels with respect to the most needed skills relevant to the health care practice environment today (Table 5): ethics in health care delivery (ranked no. 1 by both panels), professionalism, quality management and improvement in health care, evidence-based health care management and strategic planning and management.

Hospital administrators' survey: perceived needs

Surveyed hospitals were mostly urban (70%) and general, nonspecialized hospitals (75%). The average number of staffed beds was 174 (range 24–1000). The top three

Table 2 Demographic characteristics of the physicians and allied professionals in the two panels for the Delphi project

Characteristic	Physicians		Allied professionals[a]		Overall sample	
	No.	%	No.	%	No.	%
Sex						
Male	3	33	–	–	3	16
Female	6	67	10	100	16	84
Age (years)						
30–39	2	22	2	20	4	21
40–49	6	67	7	70	13	68
50–59	1	11	–	–	1	5
≥ 60	–	–	1	10	1	5
Highest education						
Undergraduate	–	–	2	20	2	11
Masters	–	–	7	70	7	37
Doctorate (PhD)	–	–	1	10	1	5
Medicine (MD)	9	100	–	–	9	47
Area of specialization						
Pharmacy	–	–	1	10	1	5
Management	–	–	4	40	4	21
Nursing	–	–	3	30	3	16
Osteopathy	–	–	110	–	1	5
General/family medicine	3	33	–	–	3	16
Paediatrics	2	22	–	–	2	11
Surgery	2	22	–	–	2	11
Dermatology	1	11	–	–	1	5
Missing	1	11	1	10	2	11
Previously taking continuing education courses						
Yes	9	–	10	100	19	100
Consider taking continuing education courses						
Yes	9	–	10	100	19	100
Main location/type of employment						
Private hospital	5	56	6	60	11	58
Private clinic	2	22	1	10	3	16
Nongovernmental organization	2	22	2	20	4	21
University	–	–	1	10	1	5
Years of experience						
Mean (standard deviation)	13.4 (5.4)		19.3 (10.4)		16.7 (9.0)	
Min–max	5–20		1–38		1–38	

[a]*One of the 10 allied professionals who completed phase 2 (including questions about profile of the respondents) did not answer Phase 3.*

management skills reported as needed by more than half of the sample were: communication and interpersonal skills (72.7%), critical thinking and problem solving (57.6%), and strategic planning (54.5%) (Table 6). Almost half of the sample (48.5% of the responding hospitals) reported needs in health information technology/systems. The need for certain skills varied based on the urban/rural status. For example, more than 50% of urban hospitals reported the need for skills in quality management and improvement (52.2%), whereas rural hospitals identified a need for human resources management skills (50.0%).

Three clinical/practice skills were identified as needed by more than half the surveyed hospitals: professional behaviour (72.7%), patient education (69.7%) and evidence-based care (51.5%). Urban hospitals also noted a need for clinical information management and sharing (52.2%), while rural hospitals identified a need in geriatric care (60%).

The health care occupations and medical specialties reported as needed on a 1–5 scale (1 = not needed at all; 5 = strongly needed) were: registered nurses (mean 4.4), nurse practitioners (mean 3.2), information technology

Table 3 Description of skills/knowledge areas identified in the consolidated list from Phase 1 of the Delphi evaluation

Skills/knowledge area	Description based on participants' responses
Information and communication technology	Skills related to innovation and technology including information search, the Internet, communication technology and implementation of unified charting systems and electronic medical records
Ethics in health care delivery	Knowledge and application of moral conduct in the delivery of patient care taking into consideration the legal, cultural and humane dimensions
Paramedic training	Basic life support training and first aid administration skills for paramedics and overall health care professional population
Geriatric and chronic care	Understanding, education and training in geriatric and chronic patient care
Quality management and improvement in health care	Knowledge about quality management and control and the application of patient cantered, standardized and evidence based care
Health systems and policies	Knowledge of the health care environment and global health systems as well as health policy formulation, implementation and interaction with policy-makers
Strategic planning and management	Skills related to the strategic planning process, implementation of strategic plans, and organizational development
Financial health care management	Knowledge of health care management areas, including dealing with third party payers, insurance arrangements, reimbursement to payers, budget planning and cost effectiveness
Inter-professional collaboration and teamwork	Inter-professional education development, shared decision-making and responsibilities, and communication between teams and clinical departments (anaesthesia, radiology etc.)
Trauma and critical care	Knowledge of updated clinical steps and procedures for trauma and critical care.
Methodology and approaches for workshop development	Ability to organize and develop workshops addressing emergent health care issues in society and encourage lifelong learning
Communication skills	Communication skills applied to clinical and non-clinical areas, including: oral skills, e.g. inter-professional communication or communication with patients, and writing skills, e.g. memos, articles, charting, clinical reports, and care plans
Leadership	Leadership skills and practices, showing class, character, and the ability to manage change in health care sector
Professionalism	Maintaining professional conduct and avoiding preferential treatment related to health care professionals, as well as patient care.
Home-based health care delivery	Knowledge of the components and resources needed for home-based care and the arrangements necessary to support its delivery
Efficiency and streamlining of health care processes	Developing efficient practices in delivering care and streamlining health care processes
Evidence-based health care management	Applying existing evidence to support and improve decision-making in health care organizations
Conflict resolution	Knowledge of group dynamics and conflict resolution abilities
Patient safety	Empowerment and engagement of employees to promote a culture of safety and support reporting adverse events
Critical analysis and problem solving	Knowledge of the research process, and the steps in conducting a research project, including data collection and analysis to support decision-making
Human resources strategies and management	Knowledge of motivation principles and practices, as well as strategies for staff retention and satisfaction, e.g. understanding health care workers jobs and responsibilities, providing relief sessions against burnout and organizational behaviour skills

specialists (mean 3.1), physician assistants (mean 2.6), laboratory technicians (mean 2.5) and general practitioners (mean 2.5) (Table 7). The top four health care professions that are most needed were common to urban and rural hospitals; only laboratory technicians and general practitioners were more needed in urban and rural hospitals, respectively, compared to their counterparts.

The medical specialties reported as needed by the surveyed hospitals were: emergency medicine (mean 3.7) and radiology (mean 3.1) (Table 7). Urban hospitals reported a greater need for anaesthesiologists (mean 2.9 vs 2.3 in the rural group) whereas rural hospitals had a shortage in numerous specialties such as surgery (mean 3.7), obstetrics/gynaecology (mean 2.9), paediatrics (mean 2.8) and internal medicine (mean 2.6).

The great majority of responding hospitals identified continuing education courses (91%), collaboration with educational institutions for training (88%), seminars (82%) and in-house/on-the-job training (73%) as opportunities to meet the skills needs of their workforce. A smaller number indicated that they would consider on-line

Table 4 Common skills/management areas between the two panels (physicians and allied professionals) in Phase 1 and Phase 2 of the Delphi evaluation

Phase 1: Common skills/management areas identified by both panels
Information and communication technology
Ethics in health care delivery
Quality management and improvement in health care
Health systems and policies
Financial health care management
Interprofessional collaboration and teamwork
Methodologies and approaches for workshop development
Communication skills
Leadership
Professionalism
Human resources strategies and management
Phase 2: Common skills/management areas retained by at least 50% of both panels
Information and communication technology
Ethics in health care delivery
Quality management and improvement in health care
Strategic planning and management
Financial health care management
Inter-professional collaboration and teamwork
Communication skills
Professionalism
Evidence-based health care management
Conflict resolution
Patient safety

Table 5 Final ranking of the needed skills/knowledge areas identified by the two panels of health care professionals (physicians and allied professionals) in phase 3 of the Delphi evaluation

Ranking			Needed skills/knowledge areas
O	P	AP	
1	1	1	Ethics in health care delivery
2	2	3	Professionalism
3	4	2	Quality management and improvement in health care
4	3	7	Evidence-based health care management
5	6	4	Strategic planning and management
6	8	6	Leadership
7	4	8	Inter-professional collaboration and teamwork
8	5	9	Communication skills
9	10	5	Information and communication technology
10	7	11	Paramedic training
11	6	13	Patient safety
12	11	14	Efficiency and streamlining of health care processes
13	13	12	Conflict resolution
14	14	10	Financial health care management
15	12	15	Critical analysis and problem solving
16	9	16	Home-based health care delivery

O = overall rank.
P = physicians panel.
AP = allied professionals panel.

Table 6 **Proportion of hospitals reporting a need for specific management and clinical skills**

Skill	Urban (*n* = 23)		Rural (*n* = 10)		Total (*n* = 33)
	% of total	% of urban	% of total	% of rural	% of total
Management					
Communication and interpersonal skills	48.5	69.6	24.2	80.0	72.7
Critical thinking and problem solving	39.4	56.5	18.2	60.0	57.6
Strategic planning	42.4	60.9	12.1	40.0	54.5
Health information technology/systems	36.4	52.2	12.1	40.0	48.5
Quality management and improvement	36.4	52.2	9.1	30.0	45.5
Human resources management	30.3	43.5	15.2	50.0	45.5
Patient safety	33.3	47.8	9.1	30.0	42.4
Financial management	30.3	43.5	12.1	40.0	42.4
Leadership	30.3	43.5	12.1	40.0	42.4
Report writing	33.3	47.8	9.1	30.0	42.4
Ethics	30.3	43.5	9.1	30.0	39.4
Research design and implementation	24.2	34.8	12.1	40.0	36.4
Health programmes/interventions evaluation	24.2	34.8	9.1	30.0	33.3
Health programmes/interventions planning	12.1	17.4	12.1	40.0	24.2
Presentation skills	12.1	17.4	3.0	10.0	15.2
Clinical/practice					
Professional behaviour (communicating with patients)	48.5	69.6	24.2	80.0	72.7
Patient education	42.4	60.9	27.3	90.0	69.7
Evidence-based care (using research evidence)	39.4	56.5	12.1	40.0	51.5
Clinical information management and sharing	36.4	52.2	9.1	30.0	45.5
Adoption of clinical guidelines	30.3	43.5	12.1	40.0	42.4
Nursing documentation (e.g., patient condition assessment, vitals, nursing interventions)	24.2	34.8	15.2	50.0	39.4
Geriatric (elderly) care	18.2	26.1	18.2	60.0	36.4
Critical care and trauma	18.2	26.1	9.1	30.0	27.3
Technical skills (e.g. procedures, tests)	21.2	30.4	6.1	20.0	27.3

courses (24%) or private consultants (40%). A majority of hospitals offered financial support for continuing education (96%), and had an annual budget (83%) for it.

Discussion

This project combined qualitative and quantitative methods to address an under-researched area and identify the perceived health care workforce needs in Lebanon. It is particularly relevant today in light of the growing pressure on the health care system in Lebanon with an increasing number of refugees, chronic internal challenges (e.g. brain drain, population aging and chronic diseases, limited resources) and the potential active role of the country in medical tourism.

This project faced some limitations that are important to highlight. We encountered challenges in recruiting men for the Delphi panels, which is reflective of the current workforce demographics in the country. This confirms evidence from recent reports that discussed out-migration of young men in search of work (*19,21*) and the cultural reputation surrounding some professions as being labelled for women. The survey response rate was 25%, though there was a good representation of both rural and urban hospitals in the sample. We were not able to pilot test the instrument, however it was reviewed by the Board of the Syndicate of Hospitals. The available list of hospitals from the syndicate turned out not be fully updated: some hospitals on the list were not functional, or not reachable at the time of the project due to outdated information. Hence, we believe that the response rate was more on the conservative side. The fact that the surveyed hospitals were all private, although the majority of hospitals in Lebanon are private, may affect the generalizability of the results to public hospitals. It is important to note that, given the nature of the project, self-reporting bias may have occurred. Since this project is the first to investigate the health care workforce needs, it is not possible to compare or benchmark the results against other similar studies in this area.

The findings of the two parts of this project reveal consistency in the top 5 skills/knowledge areas

Table 7 Health care professions and medical specialties needed by hospitals on a 1–5 scale (1 = not needed at all; 5 = strongly needed)

Profession/specialty	Urban hospitals			Rural hospitals			Total		
	No.	Mean (SD)	Range	No.	Mean (SD)	Range	No.	Mean (SD)	Range
Health care professions									
Registered nurse	22	4.3 (1.1)	2–5	10	4.6 (0.8)	3–5	32	4.4 (1.0)	2–5
Nurse practitioner	22	3.1 (1.6)	0–5	10	3.6 (1.7)	0–5	32	3.2 (1.6)	0–5
Information technology specialist	21	3.1 (1.6)	0–5	10	2.9 (1.5)	0–5	31	3.1 (1.6)	0–5
Physician assistant	21	2.5 (1.9)	0–5	8	2.8 (1.4)	0–5	29	2.6 (1.8)	0–5
Laboratory technician	22	2.6 (1.6)	0–5	9	2.2 (1.4)	0–4	31	2.5 (1.5)	0–5
General practitioner	22	2.4 (1.7)	0–5	9	2.9 (1.6)	0–5	31	2.5 (1.6)	0–5
Social care worker	21	2.0 (1.9)	0–5	8	2.1 (2.0)	0–5	29	2.0 (1.9)	0–5
Radiation therapist/technician	21	2.1 (1.5)	0–5	9	1.7 (1.6)	0–4	30	2.0 (1.5)	0–5
Dietician	22	2.0 (1.5)	0–5	9	1.9 (1.2)	0–4	31	2.0 (1.4)	0–5
Clinical psychologist	22	1.7 (1.8)	0–5	9	1.1 (1.4)	0–4	31	1.6 (1.7)	0–5
Physiotherapist	21	1.6 (1.3)	0–5	9	1.4 (1.3)	0–4	30	1.5 (1.3)	0–5
Speech therapist	21	1.5 (1.6)	0–5	8	0.9 (1.5)	0–4	29	1.3 (1.6)	0–5
Medical specialties									
Emergency medicine	21	3.5 (1.8)	0–5	10	4.2 (1.2)	2–5	31	3.7 (1.7)	0–5
Radiology	21	2.8 (1.8)	0–5	9	3.8 (1.5)	1–5	30	3.1 (1.7)	0–5
Surgery	21	2.6 (1.9)	0–5	9	3.7 (1.2)	2–5	30	2.9 (1.7)	0–5
Anaesthesiology	21	2.9 (1.1)	1–5	9	2.3 (1.8)	0–5	30	2.7 (1.7)	0–5
Internal medicine	21	2.5 (1.7)	0–5	8	2.6 (1.4)	1–5	29	2.5 (1.6)	0–5
Obstetrics/ gynaecology	21	2.3 (1.9)	0–5	9	2.9 (1.5)	1–5	30	2.5 (1.7)	0–5
Paediatrics	21	2.4 (1.7)	0–5	9	2.8 (1.4)	1–5	30	2.5 (1.6)	0–5
Pathology	20	2.4 (2.0	0–5	9	2.3 (1.2)	1–5	29	2.35 (1.7)	0–5
Palliative care	21	2.4 (1.8)	0–5	8	2.1 (2.0)	0–5	29	2.3 (1.8)	0–5

SD = standard deviation.

identified as needed: professionalism, evidence-based management, strategic planning, quality management and improvement, and communication skills. Interestingly, ethics ranked first in terms of need in the Delphi results; yet, it was reported as needed by only 40% of hospitals. Leadership ranked sixth by the two panels and was reported as needed by only 42% of hospitals. This may be explained by the nature of the work of health professionals (i.e. direct contact with patients and providers), which allows them to better capture the ethics and leadership dimensions.

The findings of this project show consistency with other studies (*3,9,26*) and with the recommendations of WHO in relation to quality improvement, partnering, and information and communication technology. These competencies have been identified by WHO as basic for continuing professional development and effective delivery of care for patients, especially in developing countries (*2,11*). It called for a shift in training to incorporate these competencies and for sustained educational reform (*2,11,27*). Ten years later, these skills are still not addressed in Lebanon: quality improvement, communication, and information management and technology were identified as being in need. This indicates that the health care workforce is still not ready and equipped to cope with the changes and pressures observed at the population and health system levels.

Although clinical skills (e.g. trauma and critical care, geriatric and chronic care) appeared in the responses of the two panels, these were not retained in the final stages of the Delphi study results. Clinical skills were also referred to by hospital administrators (e.g. geriatric care, adoption of clinical guidelines etc.), but were not considered among the most needed. This emphasizes the fact that areas beyond clinical expertise are pressing today, and should be addressed. Traditional health care professionals' curricula tend to emphasize mostly the clinical aspects of training, with educational programmes for health providers being focused on preparing the workforce for the hospital environment (*23*). A recent article on health system research priorities in the Middle East and North Africa region emphasized the need for research on the health workforce (*21*). It identified gaps in existing education and training programmes, accurate estimates and needs (numbers and specialties) and ways for enabling education and training programmes based on population needs as being among the top five research areas in health human resources. Hence, this project

contributes to this research agenda and highlights priorities that set the stage for future research in this area and professional development of health professionals.

In addition to the contribution of this project to the relevant research priorities in human health resources identified earlier (*21*), it also has implications at the practice and policy level by supporting effective health care workforce planning at the organizational and national level. The results may inform the development of national and local policies in the context of Lebanon, which establish guidelines for a desired level of skills mix in the health care workforce in rural and urban settings. They also outline areas of continuing education and professional development and present evidence that can be used by hospitals to compare and benchmark their needs to other similar organizations. The results may also be used as a starting point to open the dialogue between academic institutions and health care organizations, and unveil potential opportunities of collaboration and partnership between them to address the training needs of the healthcare workforce.

The two panels of physicians and allied professionals reported a willingness to take continuing education courses, and most hospitals indicated available financial support for this (100% of rural hospitals and 80% of urban hospitals). This is an interesting finding considering the culture in Lebanon that may not be conducive to supporting continuing education efforts (e.g., limited resources and incentives, lack of structured organized efforts for continuing education – credits and certificates, limited evidence on association between continuing education and progression through rank and position etc.). Hence, the results of this study should motivate dialogue and collaboration between hospitals, professional syndicates and universities for the development of continuing education courses and programmes addressing the identified needs. This is in line with recent calls by the WHO (2013) for more alignment between educational institutions and the systems delivering health services (*11*).

Competency-based education has been advocated as essential for educational reform and for aligning educational programmes with actual health systems priorities, especially in environments with limited resources (*8*). It allows the integration of the health needs of the population with the priority areas of the health profession. Competence in certain domains can be very dependent on the context of the country and the resources available. Therefore, instead of adapting existing foreign educational standards from resource-rich settings, which may not be compatible with the actual needs of Lebanon, one can build on the findings of this project to develop relevant programmes that target the skill needs of health workers in the country. In conclusion, the findings from this project present a first step towards informing human resources planning and professional development, and set the stage for future studies to build further evidence in this area.

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La perception des besoins par les personnels de soins de santé au Liban : un pas en avant vers une planification éclairée des ressources humaines et du développement professionnel

Résumé

Contexte : Des recherches ont déjà été menées dans plusieurs pays au regard des compétences requises pour gérer de façon efficace les organismes de soins de santé. Pourtant, peu de données sont disponibles concernant les compétences et les domaines de connaissances qui font actuellement défaut parmi les personnels de soins de santé travaillant dans des environnements disposant de ressources limitées.

Objectif : L'objectif de la présente étude était d'évaluer la perception des besoins par les personnels de soins de santé au Liban.

Méthodes : Nous avons mené une étude exploratoire suivant la méthode de Delphi, faisant intervenir deux groupes de professionnels de soins de santé et comportant une enquête nationale menée auprès de directeurs d'établissements hospitaliers afin d'évaluer les compétences nécessaires et les métiers et spécialités faisant défaut dans le secteur des soins de santé.

Résultats : Sur la base de l'étude Delphi, les cinq principaux domaines où se fait sentir le besoin en compétences et en connaissances sont les suivants : le professionnalisme, l'éthique, la gestion et l'amélioration de la qualité, la planification stratégique, la gestion et l'amélioration de la qualité et la communication. Le besoin en matière de gestion de l'information et de compétences technologiques a été mentionné par plus de 50 % des hôpitaux urbains et a été mis en avant par les deux groupes de professionnels de l'étude Delphi. Les professionnels de soins de santé se sont déclarés prêts à suivre des cours de formation continue. Les hôpitaux ont par ailleurs indiqué la disponibilité de moyens financiers et leur volonté de collaborer avec les établissements d'enseignement afin de faire bénéficier leur personnel de formations et de sessions de formation continue.

Conclusion : Nos résultats préparent le terrain pour des recherches futures portant sur les problèmes des personnels de soins de santé au Liban et viennent étayer une planification des ressources humaines fondée sur des données probantes. Ils pourraient éclairer l'élaboration de politiques nationales et locales dans le pays, capables de répondre aux besoins du système de soins de santé en matière de ressources humaines en vue de satisfaire la demande aux niveaux régional et national. Les universités, les syndicats de professionnels et les organisations non gouvernementales pourraient exploiter ces résultats afin d'élaborer des programmes de formation continue et des programmes diplômants intégrant les compétences essentielles requises pour les personnels de soins de santé.

الاحتياجات المُدْرَكَة للقوى العاملة في الرعاية الصحية في لبنان: خطوة نحو تخطيط مستنير للموارد البشرية ولتطوير أصحاب المهن الصحية [العاملين في مجال الصحة]

ميرو جعنا، ميشال مجدلاني، هيثم تميم، ريتا الرحباني

الخلاصة

الخلفية: لقد تناولت البحوث في مختلف البلدان سابقًا دراسة الكفاءات اللازمة للإدارة الفعالة لمؤسسات الرعاية الصحية. إلا أن هناك معلومات محدودة في الوقت الحاضر حول المهارات وحول مجالات المعرفة التي تفتقدها القوى العاملة في الرعاية الصحية في البيئات ذات الموارد المحدودة.

الهدف: كان الهدف من هذه الدراسة تقييم الاحتياجات المدركة للقوى العاملة في الرعاية الصحية في لبنان.

طرق البحث: أجرينا دراسة دلفي استكشافية شملت مجموعتين من المهنيين العاملين في مجال الرعاية الصحية، وكما أجرينا مسحاً على الصعيد الوطني بكامله لمديري المستشفيات لتقييم المهارات ومهن الرعاية الصحية والتخصصات المحدودة اللازمة فيها.

النتائج: اتضح لنا أن أهم ٥ مجالات من المهارات/ المعلومات المطلوبة هي: المهنية، والإدارة المستندة إلى الأدلة، والتخطيط الاستراتيجي، وإدارة وتحسين الجودة ومهارات الاتصال. وقد ركزت مجموعتا الخبراء كما ركزت المستشفيات الحضرية على إدارة المعلومات وتكنولوجيا المعلومات. وأفاد العاملون في الرعاية الصحية باستعدادهم للاستفادة من دورات التعليم المستمر. بينما أشارت المستشفيات إلى توافر الدعم المالي والاستعداد للتعاون مع المؤسسات التعليمية للتعليم المستمر ولتدريب العاملين فيها.

الاستنتاجات: تمهد النتائج التي توصلنا إليها للأبحاث المستقبلية لدراسة قضايا القوى العاملة في الرعاية الصحية في لبنان، وتدعم التخطيط القائم على الأدلة للموارد البشرية الصحية. وقد يُسْتَرْشَد بهذه النتائج في رسم السياسات الوطنية والمحلية في البلد، والتي تلبي احتياجات الموارد البشرية في نظام الرعاية الصحية لتلبية الاحتياجات الإقليمية والوطنية. وقد تستفيد الجامعات والنقابات المهنية والمنظمات غير الحكومية من هذه النتائج لتطوير التعليم المستمر والتدريب والشهادات المهنية (الدبلومات) بإدماج الكفاءات البالغة الأهمية للقوى العاملة الصحية.

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Effect of dual practice on service delivery time by surgeons in the Islamic Republic of Iran: multi-level analysis of a national survey, 2016

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Abstract

Background: One of the work patterns which affects the supply of specialists is the phenomenon of dual practice (DP), i.e., working simultaneously in the public and private sectors. Uncontrolled DP in the surgery health workforce can have adverse effects on access to surgeons, efficiency, effectiveness and quality of surgery services.

Aims: The aim of this article is to examine the impact of DP on service delivery time by surgeons.

Methods: We used a prestructured form to collect data on surgery specialists in all 925 Iranian hospitals. National medical ID codes, council ID codes, first name, surname and father's name were used for data matching. Multilevel linear regression was used to assess the association between DP and study variables, which were recruitment type, faculty status, experience, sex and age.

Results: The 4642 surgery specialists in this study, representing 31.08% of the total number of surgeons identified, spent mean 1.09 (standard deviation 0.33) hours full-time equivalent (FTE) on health care service delivery. Specialists with DP had long service delivery time (β = 0.427). Female specialists (β = −0.049) and full-time specialists (β = −0.082) spent less time on health care service delivery. Permanent specialists had higher FTE (P < 0.001) and as the population increases, FTE increases (P < 0.05).

Conclusions: Although DP had a direct impact on surgeons' working hours, it seems that a greater share of the difference in working time was used in the private sector services, leading to poor access to surgery services in the public sector. Therefore, it is necessary to develop a systems approach to regulate DP.

Keywords: surgeons, dual practice, health care service delivery, Iran

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Introduction

Surgical care is one of fundamental services in a health system; it has a key role in medical services delivery for a wide range of diseases, from prevention to acute treatments for emergency and cancer (*1*). This type of care relates to 30% of the burden of the burden of medical services delivery for a wide range of diseases (*2*) and accounts for more than 1.25% of the world's gross domestic product (2015–2030) (*3*). However, according to a 2015 estimation, at least 4.8 billion of the world's population do not have access to surgery services, and most of this inaccessibility occurs in low- to middle-income countries (*4*). The current shortage of surgery specialists will be exacerbated in the near future due to changes in world demography in aging and noncommunicable diseases, the prevalence of chronic disease and workforce flow, especially in middle- to high-income countries (*5,6*). One of the workforce flows which affects specialist supply is the phenomenon of dual practice (DP), defined as working simultaneously in the public and the private sector (*7,8*). This situation is common among specialists, especially surgeons, whose performance and job may be more associated with the private sector (*9*); however, the phenomenon is not restricted to a specific region. it is witnessed in most countries worldwide ranging from Europe to low/middle income countries such as Egypt, Indonesia and Vietnam (*10*). Uncontrolled DP in the surgery health workforce can have adverse effects on adequate access to surgeons, efficiency, effectiveness and quality of services. Since total annual working hours show the average labour supply across the year, engagement in DP may increase the total labour supply by increasing total working time, though

it mostly leads to an increase in the private supply and consequent reduction in the public supply due to the decreased time spent in this sector (*8*,*11*,*12*).

Full-time equivalent (FTE), a unit which indicates workload of physicians through calculation of working hours, can indicate increasing or decreasing impact of DP on the supply (*9*). This is why developed countries use FTE, or amount of time allocated to each service delivery location by the specialist, to estimate supply (*13*–*15*).

Despite the fact that DP among surgeons and their conduct in the allocation of working hours to the public and private sectors significantly helps health workforce planning in the provision of required surgery services, there is a lack of comprehensive studies in this respect. Hence, the present study aimed to examine the effect of DP on service delivery time by surgeons in the Islamic Republic of Iran as a developing country

Methods

Survey

A national survey was carried out in 2016 using a multi-method approach to identify and analyse the current status of DP among surgery specialist physicians. A pre-structured form, together with guidelines on completing, it was developed to collect data on specialists working in public and private hospitals in the Islamic Republic of Iran. We covered all 925 hospitals in the country; public hospitals were either owned by the Ministry of Health and Medical Education or by other public sector organizations such as the social security organization, the Ministry of Petroleum and the armed forces. Private sector hospitals included both private and charity hospitals. Supervision and accreditation for all governmental, non-governmental and private hospitals in the provinces is by the medical sciences universities, and they were the data collection reference for this study.

Data collection

In this study, a tool was developed to collect data from all hospitals of the country. Access and Excel software were utilized for data management; STATA, version 12, and R (3.0.1) software were used for data analysis. The tool comprised 2 parts: a data collection form together with instructions for completing tables on demographic characteristics, recruitment and occupation status, specifications of the employing hospitals and affiliating organization and time share. This includes information regarding number of active months per annum, average number of active days per month and average number of active hours per day. Surgery specialists were enrolled in this study; anaesthesiologists are members of the surgical specialty in the Islamic Republic of Iran and have an important role in the surgical team, so they were included in the study. They are also included among the surgical specialties in some other regions, e.g. Scandinavia (*16*).

In the instructions, necessary explanations regarding answering questions with specialized knowledge were provided to promote accurate answers. After developing the form by reviewing studies on DP and FTE, it was finalized using administrative and academic experts familiar with DP in the Islamic Republic of Iran. Face validity and content validity of each section was approved by applying the views of experts. We sent the data collection forms and instructions to all universities; we sent reminders and monitored the process for completing the forms every 15 days. Finally, the hospitals were directly contacted to increase the response rate after 2–3 months.

Quality control

To increase accuracy in the study results and minimize errors in data entry by various users and taking into consideration the necessity of cleaning the collected data, a recognized method in the data engineering field, extraction, transformation and loading, was used. This method was adjusted and adapted to match data from the reference banks through data recapturing (*17*) and has been described previously (*18*).

With the aim of matching the acquired data from the survey with the available reference data banks, 3 criteria for each data item, including medical council code, national ID number, name, surname and name of father (together with initials), were used as matching variables to identify the recaptured data for the same person. This was performed by using the SQL functions of Access.

Identifying of physicians with dual practice

To identify the physicians holding multiple jobs, a data matching model was applied: duplicate data were detected among the health ministry databases and other public and private records. After identifying duplicate data (indicating physicians with DP), the main occupation location was specified based on type of recruitment relation listed on the forms. The share of dual practice among public sector specialists in each province and its relation with other characteristics of the physicians and conditions of provinces was then determined.

In this study, response rate was 93% (858 of the 925 hospitals). Out of 14 931 surgery specialists, a total of 4642 surgery specialists were enrolled in this study.

Statistical analysis

Descriptive statistics in terms of mean, standard deviation (SD), frequency and percentage were used. Average time share was calculated for each specialty using the following formula (*19*).

$$TE = \frac{\sum_{i=1}^{\infty} \left(\frac{M_i \times D_i \times H_i}{W_i \times 40\text{h}} \right)}{N}$$

Where:

M = number of individual active months a year

D = mean individual active days per M

H = mean individual hours per D

W = number of weeks per year

N = number of specialties.

Available annual working hours = W(i) × 40 (routine working hours a week in the Islamic Republic of Iran)

Independent samples *t*-test and 1-way analysis of variance were used to compare mean FTE between study subgroups. Multilevel linear regression analysis was used to examine the relationship of the variables with DP. To measure the correlation of the findings in each province, these analyses were conducted via multilevel models in which the coefficients allowed change in each province (or even towns if necessary). To identify the number of required levels (efficiency), the likelihood ratio test was used. Finally, we used the backward elimination method to remove inefficient variables from the model in order to obtain the most *parsimonious* model (*20*). *P*-value < 0.05 was considered significant.

Ethical approval

The ethical committee of Tehran University of Medical Sciences assessed and approved the study methodology and ethical considerations (ethical code IR.TUMS.VCR.REC.1395.1045 dated 16 November 2016).

Results

Descriptive statistics

The number of surgery specialists included in this study was 4642; 3048 (65.7) were male, and the main age group was 45–55 years, 1911 (41.2%) (Table 1). The majority were employed in teaching hospitals of medical universities, 3854 (83.0%). In terms of recruitment type 1414 (30.5%) were employed on a contractual basis. The largest groups of specialists worked in obstetrics and gynaecology 1049 (22.6%), general surgery 885 (19.1%) and anaesthesiology 772 (16.6%). We found that 2929 (63.1%) were engaged in DP, i.e. they were working in other service locations as well.

Full-time equivalent status

Specialists' time share showed that on the whole specialists spent an average 1.09 (SD 0.33) FTE on health care service delivery. In comparison to other specialists, those working in nose, throat, head and neck surgery, general surgery and neurosurgery spent more time on service delivery, mean 1.28 (SD 0.33) FTE hours (Table 2).

Moreover, specialists who engaged in DP spent significantly more FTE, on average 1.26 (SD 0.30), compared to the others. Information on the FTE of specialists' characteristics is shown in Table 3.

Impact of dual practice on surgeons' full-time equivalent

In multilevel linear regression analysis, surgeons engaged in DP had a significantly higher FTE (β = 0.12, $P \leq 0.001$). The greatest differences for FTE between dual

Table 1 Descriptive statistics for the 4642 Iranian surgery specialists enrolled in this study

Characteristic	No.	%
Sex		
Male	3048	65.7
Female	1594	34.3
Age (years)		
< 40	1096	23.6
40–45	683	14.7
45–55	1911	41.2
55–65	706	15.2
> 65	246	5.3
Main occupation location		
University hospital	3854	83.0
Social security hospital	211	4.5
Army forces hospital	36	0.8
Petrochemical company hospital	24	0.5
Other public hospital	517	11.1
Faculty membership status		
Member	1154	24.9
Non-member	3488	75.1
Employment status		
Geographic full-time	1194	25.7
Non-full-time	3448	74.3
Recruitment type		
Permanent	1395	30.1
Zarib K[a]	845	18.2
Payam avar[b]	5	0.1
Peymani[c]	418	9.0
Contractual	1414	30.5
Other	348	7.5
Unspecified	217	4.7
Surgical specialism		
General surgery	885	19.1
Orthopaedics	535	11.5
Urinary tract & genital	347	7.5
Neurosurgery	224	4.8
Nose, throat, head & neck	390	8.4
Obstetrics & gynaecology	1049	22.6
Ophthalmology	440	9.5
Anaesthesiology	772	16.6
Dual practice		
Yes	2929	63.1
No	1713	36.9

[a]*A recruitment contract in which medical specialty graduates who are legally committed to certain obligations fulfil these obligations in a health-related centre.* [b]*A recruitment contract in which graduates who are committed to do obligatory military service work in health related centres instead, mostly in deprived areas.*
[c]*Semi-permanent.*

Table 2 Status of full-time equivalent (FTE) distributed by characteristics of specialists

Characteristic	FTE	SD	*P*-value
Sex			
Male	1.11	0.35	0.001
Female	1.05	0.29	
Age (years)			
< 40	1.04	0.29	0.005
40–45	1.05	0.34	
45–55	1.10	0.34	
55–65	1.20	0.33	
> 65	1.10	0.32	
Main occupation location			
University hospital	1.10	0.33	0.001
Other hospital	1.07	0.32	
Faculty membership status			
Member	1.23	31.00	0.52
Non-member	1.05	32.00	
Employment status			
Geographic full-time[a]	1.12	0.34	0.001
Non-full-time	1.01	0.28	
Recruitment type			
Permanent	1.17	0.33	0.001
Zarib K [b]	1.04	0.27	
Payam avar [c]	1.08	0.32	
Peymani [d]	1.12	0.32	
Contractual	1.07	0.34	
Other	1.02	0.34	
Surgical specialism			
General surgery	1.16	0.35	0.04
Orthopaedics	1.11	0.34	
Urinary tract & genital	1.18	0.37	
Neurosurgery	1.28	0.33	
Nose, throat, head & neck	1.12	0.34	
Obstetrics & gynaecology	1.07	0.30	
Ophthalmology	1.06	0.29	
Anaesthesiology	0.93	0.27	
Dual practice			
Yes	1.26	0.30	0.005
No	0.81	0.12	

SD = standard deviation.

[a] *Physicians who are supposed to be full time (54 h per week) and are not allowed to be active in any other locations/sectors except their main occupation.*

[b] *A recruitment contract in which medical specialty graduates who are legally committed to certain obligations fulfil these obligations in a health-related centre.*

[c] *A recruitment contract in which graduates who are committed to do obligatory military service work in health-related centres instead, mostly in deprived areas.*

[d] *Semipermanent.*

practitioners and non-dual practitioners were observed among specialists of nose and throat and head and neck surgery (β = 0.49, $P \leq 0.001$, general surgery (β = 0.48, $P \leq 0.001$) and neurosurgery (β = 0.48, $P \leq 0.001$).

Female compared to male specialists (β = −0.49, $P \leq 0.001$) and full time compared to non-full-time specialists (β = −0.082, $P \leq 0.001$) spent less time on health care service delivery (Table 3). In terms of recruitment type and provincial characteristics, the specialists with permanent recruitment type had higher FTE ($P \leq 0.001$) and as the population increases, FTE increases ($P < 0.05$).

Table 4 shows the comparison of FTE between DP and non-DP and factors of affecting FTE for the two groups. Among the non-DP practitioners, those younger than 39 years (P = 0.005), Zarib K (P = 0.004) and geographic full-time surgeons (P = 0.005) and female surgeons (β = 0.021, $P \leq 0.001$) had higher FTE compared with their peers (Zarib K is a recruitment contract in which medical specialty graduates who are legally committed to certain obligations fulfil these obligations in a health-related centre).

Moreover, despite the general results, among non-DP surgeons, obstetrics and gynaecology was one of the specialties which demonstrated the highest FTE. There was a negative association between the proportion of private hospitals in each province and FTE, and there was a positive association between regional development and FTE (Table 4).

Discussion

Our findings on 4642 surgery specialists showed that they worked 43.6 hours per week on average (1.09 FTE). Comparison of different fields showed that DP had more impact on FTE and total working hours in certain specialty areas, including nose, throat, head and neck surgery, general surgery and neurosurgery. Studies showed that these specialties were the highest paying fields in the private sector (*9*). In comparison, in Australia working hours per week were 50 hours (1.25 FTE) for neurosurgeons, 49.5 hours (1.23 FTE) for urologists and 47.5 hours (1.19 FTE) for general surgeons (*21*). In the United States of America (USA), maximum hours of service per week for surgeons in orthopaedics, internal medicine and neurosurgery are 1.6, 1.4 and 1.4 FTEs, respectively (*22*). Therefore, it seems that increased demand for the services of such specialists and the trend in burden of disease, especially in low-income countries (*23*), together with global population aging has led to longer waiting lists for these services (*24*) and more time being spent in responding to these needs.

Previous research has shown DP has no significant effects on the total working hours in the public sector. In fact, most of the physicians who work in DP complete their hours in a public hospital and work extra hours in a private hospital (*25*). Another study showed that, for some surgical specialties, practitioners spend fewer hours a week in the public sector to accommodate their other work (DP) in the private sector (*9*). One study showed that financial and non-financial attraction in the private sector caused DP specialists who do not have time constraints to spend more time working in this sector (*26*).

Another study indicated that some surgeons, e.g. otolaryngology and ophthalmology surgeons, spend

Table 3 Multi-level linear regression analysis to assess association between study variables and full-time equivalent hours

Characteristic	β	95% CI		*P*-level	*P*-variable
		Lower limit	Upper limit		
With dual practice					
Surgical specialization					
(Without dual practice)					
General surgery	0.48	0.52	0.45	0.001	
Orthopaedics	0.44	0.49	0.38	0.001	
Urology	0.46	0.53	0.39	0.001	
Neurosurgery	0.48	0.60	0.36	0.001	
Nose, throat, head & neck	0.49	0.54	0.43	0.001	0.001
Obstetrics & gynaecology	0.40	0.43	0.37	0.001	
Ophthalmology	0.39	0.43	0.35	0.001	
Anaesthesiology	0.32	0.36	0.29	0.001	
Total	0.427	0.442	0.412	0.001	
Physicians' characteristics					
Sex					
Male					0.001
Female	−0.049	−0.067	−0.030	0.001	
Age (years)					
< 39					
39–45	0.01	−0.019	0.041	0.484	
45–55	0.03	0.010	0.059	0.006	0.001
55–65	0.12	0.092	0.155	0.001	
> 65	0.04	0.000	0.089	0.051	
Experience (years)					
≤ 5					
6–15	0.009	−0.020	0.039	0.529	0.001
15–25	0.134	0.101	0.167	0.001	
> 25	0.098	0.054	0.142	0.001	
Recruitment type					
Permanent					
Zarib K[a]	−0.086	−0.115	−0.056	0.001	
Payam avar[b]	−0.135	−0.405	0.135	0.328	
Peymani[c]	−0.040	−0.074	−0.006	0.022	0.001
Contractual	−0.084	−0.108	−0.061	0.001	
Other	−0.102	−0.139	−0.065	0.001	
Faculty status					
Non-faculty					0.001
Faculty	0.160	0.138	0.182	0.001	
Full-time status					
Not full-time					0.001
Geographic full-timed	−0.082	−0.104	−0.060	0.001	
Provincial characteristics					
Population (000)					
≤ 500					
501–2000	0.075	0.013	0.136	0.017	0.031
2001–5000	0.051	−0.111	0.214	0.536	
≥ 5001	0.197	0.005	0.389	0.044	
Extent of regional development [e]	0.003	−0.032	0.031	0.992	0.992
Share of private hospitals [f]	−0.073	−0.375	0.229	0.635	0.635

[a]*A recruitment contract in which medical specialty graduates who are legally committed to certain obligations fulfil these obligations in a health-related centre.* [b]*A recruitment contract in which graduates who are committed to do obligatory military service work in health-related centres instead, mostly in deprived areas.* [c]*Semi-permanent.* [d]*Physicians who are supposed to be full time (54 hours per week) and are not allowed to be active in any other locations/sectors except their main occupation.* [e]*Estimated according to development coefficient in each province.* [f]*Estimated according to proportion of private hospitals in each province.*

Table 4 **Comparison of full-time equivalent for dual and non-dual practitioners**

Characteristic	Dual practice					Non-dual practice				
	β	95% CI		*P*-level	*P*-variable	β	95% CI		*P*-level	*P*-variable
		Lower limit	Upper limit				Lower limit	Upper limit		
Physicians' characteristics										
Sex										
Male										
Female	−0.049	−0.072	−0.027	0.001	0.001	0.021	0.009	0.032	0.001	0.001
Age (years)										
≤ 39										
40–45	0.039	0.001	0.077	0.044	0.005	−0.017	−0.035	0.000	0.049	0.003
46–55	0.050	0.020	0.081	0.001		−0.021	−0.036	−0.007	0.004	
56–65	0.063	0.027	0.099	0.001		−0.017	−0.041	0.007	0.174	
≥ 66	0.074	0.021	0.127	0.006		−0.014	−0.042	0.014	0.330	
Experience (years)										
≤ 5										
6–15	0.034	−0.002	0.070	0.066	0.001	−0.012	−0.029	0.005	0.153	0.467
16–25	0.060	0.022	0.099	0.002		−0.016	−0.040	0.008	0.194	
> 25<	0.082	0.031	0.132	0.001		−0.006	−0.036	0.024	0.684	
Recruitment type										
Permanent										
Zarib K[a]	−0.054	−0.091	−0.017	0.004	0.001	0.048	0.031	0.064	0.001	0.001
Payam avar [b]	0.085	−0.316	0.487	0.677		0.053	−0.075	0.182	0.415	
Peymani[c]	−0.025	−0.064	0.014	0.214		0.039	0.017	0.061	0.001	
Contractual	−0.052	−0.079	−0.025	0.001		−0.016	−0.031	0.000	0.043	
Other	−0.043	−0.088	0.002	0.06		−0.040	−0.062	−0.018	0.001	
Faculty membership status										
Non-faculty										
Faculty	0.076	0.052	0.101	0.001	0.001	0.022	0.010	0.035	0.001	0.001
Full-time status										
Non-full-time										
Geographic full-timed	−0.060	−0.087	−0.033	0.001	0.001	0.022	0.010	0.035	0.001	0.001

Table 4 Comparison of full-time equivalent for dual and non-dual practitioners (*concluded*)

Characteristic	Dual practice					Non-dual practice				
	β	95% CI		*P*-level	*P*-variable	β	95% CI		*P*-level	*P*-variable
		Lower limit	Upper limit				Lower limit	Upper limit		
Surgical specialty										
General surgery										
Orthopaedics	−0.067	−0.103	−0.031	0.001		−0.023	−0.046	0.000	0.051	
Urology	−0.002	−0.043	0.039	0.911		0.000	−0.029	0.028	0.974	
Neurosurgery	0.027	−0.018	0.072	0.244		0.013	−0.036	0.062	0.608	
Nose and throat and head and neck surgery	−0.032	−0.073	0.009	0.122	0.001	−0.032	−0.057	−0.008	0.010	0.037
Obstetrics & gynaecology	−0.089	−0.120	−0.058	0.001		0.004	−0.014	0.023	0.657	
Ophthalmology	−0.113	−0.154	−0.072	0.001		−0.005	−0.028	0.017	0.652	
Anaesthesiology	−0.278	−0.215	−0.136	0.001		−0.011	−0.029	0.006	0.202	
Provincial characteristics										
Population (000)										
≤ 500										
501–2.000	0.040	−0.017	0.096	0.166		−0.009	−0.033	0.014	0.445	
2.001–5.000	−0.033	−0.170	0.104	0.638	0.389	−0.026	−0.084	0.032	0.384	0.741
> 5.000	0.085	−0.071	0.242	0.286		−0.003	−0.065	0.059	0.926	
Extent of regional development	−0.012	−0.045	0.021	0.480	0.480	−0.014	−0.025	−0.004	0.009	0.009
Share of private hospitals	−0.234	−0.543	0.075	0.138	0.265	−0.012	−0.045	0.021	0.480	0.001

[a]A recruitment contract in which medical specialty graduates who are legally committed to certain obligations fulfil these obligations in a health-related centre. [b]A recruitment contract in which graduates who are committed to do obligatory military service work in health related centres instead, mostly in deprived areas. [c]Semi-permanent. [d]Physicians who are supposed to be full time (54 hours per week) and are not allowed to be active in any other locations/sectors except their main occupation.

more time in DP owing to their having the highest pay in the private sector compared with the other specialties (*9*). Therefore, it seems that the private sector has increased its share in the surgery market because of the higher income (*27*). Another incentive that encourages specialists' efforts to transfer from public to private practice is the differences in the remuneration mechanism: dual practitioners may be more motivated to dedicate their time to private practice when they are paid fixed salary in the public sector versus fee-for-service or an hourly rate paid in the private sector (*25,26*).

In terms of non-financial factors, one of the most important reasons for the doctors' tendency to engage DP is the different work context in the 2 sectors. For instance, having more autonomy in private hospitals was considered valuable by specialists. Other non-financial factors such as relationships between different health providers, professional satisfaction, public responsibility, prestige, etc. were generally perceived as much better in the private sector (*28*). On the other hand, low salaries, poor infrastructure, unmanageable workloads, staff shortages and absenteeism lead to low satisfaction in the public sector (*29*).

Our findings showed that full-time geographic specialists had a lower FTE on the whole compared to non-full-time specialists. This finding was true for those engaged in DP as well, however, full-time geographic specialists who did not engage in DP showed a higher FTE. According to the existing (2010) law, full-time specialists are not permitted to work in other sectors (*30*). Therefore, bearing in mind the direct impact of DP on FTE, it seems rational that non-full-time physicians who engaged more in DP show a higher FTE (*31,32*). Considering the current law, full-time specialists are obliged to spend at least 1 FTE on medical activities (*30*). Hence, among non-DP specialists, FTE of full-time specialists was significantly higher than non-full-time specialists, and this is similar to the findings of another study conducted on surgery groups (*33*). It should be noted that there was no similar study in the Islamic Republic of Iran. Considering limitation of studies from other countries and the relevancy of findings to the Iranian context, we could not clearly delineate previous research in the country from that conducted in other countries. Therefore, this issue was an important limitation of the present study and further discussion in this regard was limited

We found that university faculty surgeons had a higher FTE compared to non-faculty surgeons. Faculty specialists receive more patients since that they have a certain reputation (*9*), therefore, they spend more time visiting their private patients. However, contrary to our findings, faculty specialists in Brazil spend 32% less time on medical activities and engage more in educational affairs (*34*). This could be due to the integration of medical education with health care services in the Islamic Republic of Iran (*35*), and hence clinical and educational duties of specialists go on simultaneously.

Among specialists who engaged in DP, males had higher FTE than females, while in non-DP specialists the reverse was found. Contradictorily, in a previous study it was found that female surgeons spent more time with their patients than their male peers (*36*). It is likely that several factors led to this difference among non-DP specialists, but this is not within the scope of the present study.

Among the other factors we studied, age and work experience had an effect on the FTE of surgery groups. Years of surgery experience lead to a tendency among patients to consult highly experienced surgeons (*37,38*). In the USA, in order to meet regional needs, at least 1.3 FTE is required from each specialist considering the number of consultations with experienced specialists (*33*). This is because less experienced or young specialists do not have the capacity to compete in other markets or with senior specialists (*39*) and they allocate their extra time to research or education (*40*). However, in contrast to the above findings, younger non-DP specialists, especially in less developed areas, had a higher FTE. As indicated in the specialists' rules of service, after graduation, young physicians are recruited to serve as Zarib K and full-time specialists in underserved areas (*30*). Since, there is limited capacity for private activities in these areas, there would be a constraint on the increase of FTE for specialists. Therefore, the young full-time specialists among the non-DP surgeons will have higher FTE.

Although this research was carefully prepared, this study had a number of limitations. First, we encountered a difficulty to access some data, e.g. socioeconomic status of physicians, etc., which could be useful in the analysis of behaviour when engaging in DP. Another limitation was the lack of related literature and studies on level of DP by specialty area, which could facilitate greater accuracy in interpreting our findings. However, we did adopt a variety of approaches for analysis and data collection, which illustrated the level of DP among surgery specialists in the Islamic Republic of Iran.

Conclusion

On the whole, DP has a direct impact on specialists working hours. A greater share of the difference in working time was expended in the private sector services; consequently this reduced the time spent on the public sector services by dual practitioners compared with non-duals. In practice, the effect was to reduce access to surgeons and quality of services in public health. Particularly, given the high level of out-of-pocket expenditure in the private sector, it led to aggravating the limited access of low-income people and conclusion in long term Uncontrolled DP in the surgery health workforce can have adverse effects on efficiency, effectiveness and quality of services.

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Competing interests: None declared.

Répercussions de la double pratique sur les délais de prestation de services par les chirurgiens en République islamique d'Iran : analyse pluri-niveau d'une enquête nationale, 2016

Résumé

Contexte : L'un des modes de travail qui affecte la disponibilité des médecins spécialistes est le phénomène de la double pratique, c'est-à-dire le cumul de plusieurs activités professionnelles dans les secteurs public et privé. L'absence de contrôle de la double pratique parmi les professionnels de santé en chirurgie peut avoir des répercussions néfastes sur l'accès aux chirurgiens ainsi que sur l'efficacité, la rentabilité et la qualité des prestations chirurgicales.

Objectifs : L'objectif du présent article est d'étudier l'impact de la double pratique sur le temps consacré à la prestation de service par les chirurgiens.

Méthodes : À l'aide d'un formulaire préstructuré, nous avons recueilli des données concernant les chirurgiens spécialisés dans l'ensemble des 925 hôpitaux que compte la République islamique d'Iran. Les données ont été comparées en utilisant les numéros d'identification nationaux des médecins, leurs numéros d'inscription à l'ordre des médecins, leurs prénoms, noms et patronymes. La régression linéaire à plusieurs niveaux a été appliquée afin d'évaluer le lien entre la double pratique et les variables étudiées, à savoir le type de recrutement, l'exercice de fonctions d'enseignement, l'expérience, le sexe et l'âge.

Résultats : Les 4642 chirurgiens spécialisés inclus dans cette étude, représentant 31,08 % du nombre total des chirurgiens identifiés, consacraient en moyenne 1,09 heure (écart-type : 0,33) en équivalent temps plein (ETP) à la prestation de services de soins de santé. Les spécialistes s'adonnant à la double pratique faisaient preuve de temps de prestation plus longs (β = 0,427). Les femmes spécialistes (β = −0,049) et les spécialistes travaillant à temps plein (β = −0,082) montraient des temps de prestation plus courts. Les spécialistes permanents avaient un nombre d'ETP plus élevé (p < 0,001), ce dernier croissant avec l'augmentation de la population (p < 0,05)

Conclusion : Bien que la double pratique ait des répercussions directes sur les horaires de travail des chirurgiens, il semble qu'une plus grande partie de la différence dans le temps de travail soit consacrée à la prestation de services dans le secteur privé, ce qui affecte l'accès aux services chirurgicaux dans le secteur public. Il est donc nécessaire d'élaborer une approche systémique afin de réglementer la double pratique.

أثر الممارسة المزدوجة على زمن تقديم الجراحين في «جمهورية إيران الإسلامية» للخدمات: تحليل متعدد المستويات لدراسة مسح وطنية، ٢٠١٦

محبوبة بيات، آزاد شكري، رقية خليل نزاد، الميرامير بهاء الدين، محمود خدادوست، حامد فتاحي، غلامحسين صالحي زلاني، ايرج حريرجي، مهدي ياسري، إبراهيم جعفري بويان، علي أكبري ساري

الخلاصة

الخلفية: إن ظاهرة الممارسة المزدوجة من أنماط العمل التي تؤثر على تقديم الأطباء الاختصاصيين للخدمات، والمقصود بالممارسة المزدوجة أن يعمل الطبيب في القطاعين العام والخاص في وقت واحد. يمكن للممارسة المزدوجة في القوى العاملة الصحية في مجال الجراحة أن تؤثر على الوصول إلى الجراحين تأثيرًا ضارًّا يتعذر ضبطه، وعلى كفاءة وفاعلية وجودة الخدمات الجراحية.

الهدف: تهدف هذه المقالة إلى التعرف على تأثير الممارسة المزدوجة على زمن تقديم الجراحين لخدماتهم.

طرق البحث: استخدمنا نموذجًا مُسْبَق الإعداد لجمع البيانات عن الاختصاصيين في الجراحة في جميع المستشفيات الإيرانية وعددها ٩٢٥ مستشفىً. استخدمنا رموز الهوية الطبية الوطنية ورموز الهوية لمجلس الأطباء والاسم الأول واسم الأسرة واسم الأب في التوافق بين البيانات. استخدمنا التحوُّف الخطي المتعدد المستويات لتقييم الارتباط بين الممارسة المزدوجة وبين متغيرات الدراسة مثل نوع التوظيف، ودرجة عضو هيئة التدريس، والخبرة، ونوع الجنس، والسن.

النتائج: أمضى ٤٦٤٢ طبيبًا اختصاصيًّا بالجراحة، يمثلون ٣١,٠٨٪ من مجموع عدد الجراحين، ١,٠٩ ساعة في هذه الدراسة (الانحراف المعياري ٠,٣٣) من معادلات ساعات التفرغ في تقديم خدمات الرعاية الصحية. واتضح أن الأطباء الاختصاصيين ذوي الممارسة المزدوجة يكون لديهم زمن تقديم الخدمات طويلًا (β = ٠,٤٢٧). وتمضي الاختصاصيات (β = −٠,٠٤٩) كما يمضي الاختصاصيون المتفرغون (β = −٠,٠٨٢) وقتاً أقصر في تقديم خدمات الرعاية الصحية. أما التخصصات الدائمة فتكون معادلات ساعات التفرغ فيها أعلى (P < ٠,٠٠١) ومع ازدياد أعداد السكان تزداد معادلات ساعات التفرغ (P < ٠,٠٥).

الاستنتاجات: رغم أن للممارسة المزدوجة تأثيرًا مباشرًا على ساعات عمل الأطباء الجراحين، إلا أنه يبدو أن النصيب الأكبر في الاختلاف في أوقات العمل قد استفادت منه الخدمات في القطاع الخاص، مما أدى إلى تدني فرص الوصول إلى الخدمات الجراحية في القطاع العام. ولذلك فإن من الضروري وضع مقاربة منهجية لتنظيم الممارسة المزدوجة.

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Factors influencing medical specialists' dual practice in the Islamic Republic of Iran

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Abstract

Background: Dual practice (DP) is performing several different jobs at the same time and has effects on healthcare services delivery.

Aims: To identify the causes of medical specialists' tendency towards DP in the Islamic Republic of Iran.

Methods: We used a qualitative approach to identify the factors affecting DP in medical specialists in 2016. We used a purposive and outlier sampling method to conduct semistructured deep interviews with 14 key informants. The data analysis was performed simultaneously with data collection using thematic content analysis by MAXQDA (version 10.0). Interviews continued up to data saturation. The quality of the study was ensured by addressing the criteria of Guba and Lincoln.

Results: The results of the interviews showed six themes and 16 subthemes for specialists' propensity to DP. Major themes included financial incentives, cultural attitudes about professional identity of physicians, experience and academic level of specialists, controlling approaches in the public sector, available infrastructure for responding to the population needs in the public sector, and regional characteristics of health service locations.

Conclusions: Medical specialists' DP is a multidimensional issue, influenced by different factors such as financial incentives, cultural attitudes and available infrastructure. Considering the capacities and conditions of each country, control and management of this phenomenon require regulatory and incentive mechanisms, which in the long term can modify private and public sector differences and increase the willingness of doctors to work in the public sector.

Keywords: dual practice, medical specialist, private practice, public sector, Islamic Republic of Iran

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Introduction

According to the World Health Organization (WHO), the global shortage of physicians, midwives and nurses was estimated to be 11.6 million in 2013 (*1*). Dual practice (DP) is defined as performing several different jobs at the same time, and it has emerged as a reason for the workforce shortage, especially in low- and middle-income countries (*2*,*3*). This phenomenon occurs in most countries, even where it is banned. For example, nearly all highly skilled medical professionals in Austria, 90% of general physicians in Ireland, and 60% of general physicians in the United Kingdom of Great Britain and Northern Ireland work in private and public hospitals (*4*). Physicians work in both public and private hospitals and clinics to raise their income in most countries (*5*). Other factors that attract physicians to DP include greater flexibility of private practice, more opportunities for patient contact and more self-management (*6*,*7*).

Concerns about the effects of DP on different aspects such as accessibility to healthcare services have made it a significant issue in the health systems in many countries (*8*). The mechanisms used for management and control of DP, as well as economic, social, cultural and legal conditions in different countries, result in DP having different consequences on health systems (*9*,*10*). These consequences include: reduced working hours of doctors; absenteeism; limited access to dual practitioners due to the lack of full-time attendance (especially in the public sector) (*4*,*11*); shift of patients from the public to private sector due to better quality of services in the latter; conflicts of interest of physicians who simultaneously work in private and public sectors (*12*–*14*); greater

pressure on nurses and other health workers who are working with dual practitioners (*12*); and the request for clandestine or informal payments in areas with no (or limited) private facilities, in which DP is not feasible (*15*).

Different countries have different approaches ranging from total freedom to total prohibition on dealing with DP. Indonesia and Egypt have adopted full-freedom strategies due to workforce surpluses and inability of the public sector to pay more salaries (*16*). Norway (*17*) and Bangladesh (*18*) have encouraged physicians to withdraw from the private sector through increasing public revenues. Some countries such as India, Italy, Portugal and Spain are providing incentives for public services to retain specialists (*14*). Other countries such as some provinces of Canada (*19*), China, Kenya, Zambia (*20*), Greece (*21*) and some Indian states (*22*) have supported a full ban on DP, with interventions such as creating a desirable work environment, financial monitoring, and providing financial resources for the public sector, through taxation.

In the Islamic Republic of Iran, DP of public physicians in the private sector is one of the main challenges to the health system. According to one study, the rate of DP of public medical specialists in the private sector is 42.3% (*23*). Although there is a complete ban on DP for full-time specialists according to national legislation and regulation (*24*), factors such as the need to increase the share of health expenditure from public sources and determining tariffs based on actual costs, have caused low enforcement of these laws and regulations (*25*). In the Islamic Republic of Iran two reviews of the reasons for DP among physicians point to factors such as a tendency towards simultaneous use of public and private sector benefits, monetization, institutional characteristics of the public sector including control approaches and work pressures, and individual characteristics of physicians (*26*,*27*).

Because of the limited number of studies and lack of evidence on the contributing factors to specialists' DP in the Islamic Republic of Iran and low- and middle-income countries (*28*), the present study aimed to identify the causes of the tendency for medical specialists towards DP in the Islamic Republic of Iran through interview-based qualitative research of the views of medical university directors and managers.

Methods

We used a qualitative approach via content analysis to identify the factors affecting DP among all medical specialists. The data were collected through in-depth, face-to-face interviews about the reasons for specialists' tendency towards DP. This study was part of a comprehensive study conducted in 2017, in which, after calculating the prevalence of DP by specialty and province, the provinces were divided into 3 groups with high, middle and low rates of DP (*23*).

We used a purposive and outlier sampling method (*29*) to select key participants from three groups of universities with high, middle and low rates of DP (*23*) to cover all the Iranian provinces. Key informants of universities were determined in a focused discussion group with some administrative and academic experts familiar with the university sector. The focused discussion group selected the deputies for curative affairs of medical universities as key informants for interview. A letter were sent inviting them to participate and interviews continued until the saturation stage based on the researchers' ongoing and cumulative judgement, using a hybrid saturation model (inductive thematic saturation and data saturation) (*30*,*31*).

The semistructured interviews were conducted by two experienced researchers among the authors, AS and MB. Each interview lasted an average of 35 minuntes (range 25–45 minutes). All interviews were audiotaped after obtaining permission from the participants and transcribed on the same day.

For quality assurance of the research as well as validating the data, the proposed criteria of Guba and Lincoln were used (*31*). To ensure credibility of the interview data, we used peer debriefing as well as member checking. The transcripts of the interviews were given to the participants to read in order to make sure that they were transcribed correctly. Moreover, each transcript was carefully and independently reviewed and labelled by two persons, including one of the researchers and another who held impartial views of the study (*32*). For dependability and conformability of the data, we used different methods such as in-depth methodological descriptions, maintaining all documentation related to the study, and trying to obtain comments from others. Transmissibility of data and the ability to follow the study path by others was guaranteed by actions such as providing a complete description of the themes, presenting participant features, description of data collection method, and making examples of contributors.

For content analysis we used a 3-step model (*33*) including: identifying the early themes and subthemes of the key points of the interviews; identifying concepts, themes and subthemes based on comparisons, understanding overlaps and boundaries; and extraction of themes for creating the main concepts by listing subthemes that were applied systematically to the whole data set. Afterwards, through two discussion sessions with the experts, the extracted themes and subthemes were discussed to categorize the final themes. The content analysis of the data started from the first interview at the same time as conducting the other interviews. The data were analysed using MAXQDA version 10.0.

We provided a documented interview guide to: explain clearly the purpose of the study to the interviewees before the interviews; ensure the confidentiality of the information of the participants at all stages of the study by using the codes instead of names; ensure that participants had freedom to leave the study at any time; and observe the ethical principles of recording and storing information collected at all stages of the research.

Table 1 **Characteristics of the interview participants**

Participant code	Interview length (min)	Sex	Position	University	Major	DP level	No. of subthemes
P1	38	Male	DCA	North Khorasan	MS	36%	44
P2	42	Male	DCA	Hormozgan	Health policy	21%	35
P3	32	Male	HAM	Ilam	GP	18.9%	24
P4	35	Male	HAM	Gilan	GP	69%	25
P5	30	Female	DCA	Tehran	MS	57%	20
P6	45	Male	Deputies of ministry	–	MS	–	33
P7	36	Female	Deputies for research affairs	Zabol	GP	26%	29
P8	30	Male	DCA	Birjand	MS	27%	37
P9	25	Male	DCA	Mazandaran	MS	46%	23
P10	30	Male	DCA	Kurdestan	MS	30%	18
P11	35	Male	HAM	Isfahan	GP	47%	32
P12	33	Male	DCA	Tabriz	MS	57%	40
P13	36	Male	DCA	Semnan	MS	24%	30
P14	41	Male	DCA	Shiraz	MS	24%	43

DCA = deputy for curative affairs; GP = general practitioner; HAM = hospital affairs manager; MS = medical specialist.

Results

We interviewed 14 participants with an average age of 51 (standard deviation 3.6) years. The majority of them were male (85%), deputies for curative affairs of medical universities (71%) and medical specialists (65%) (Table 1). Six themes, 16 subthemes and 41 issues were identified and confirmed by participants (Table 2). The level of medical specialists' DP in column 7 of Table 1 is based on the results of the first phase of the main study (*23*). The codes extracted from the interviews were presented as 6 themes: financial incentives; cultural attitudes about professional identity of physicians; experience and academic level of specialists; controlling approaches in the public sector; available infrastructure for responding to the population needs in the public sector; and regional characteristics of health service locations. These themes included the subthemes and issues that are explained below.

Financial incentives

Financial incentives were organized into 2 subthemes, income gap between public and private sectors, and owning of private hospital shares by public specialists.

Income gap between public and private sectors

Income gap between public and private sectors was one of the main factors affecting the behaviour and decisions of Iranian specialists towards DP. One of the main issues for income gap was the irrational difference between private and public sector tariffs. According to the Iranian Universal Insurance Law (*34*), tariffs are calculated based on cost price. Consideration of capital gains and depreciation means that private sector tariffs were more expensive than those of the public sector. Participant 10 commented: "In the private sector, for the same therapeutic treatment, physicians are paid about eight times higher than in the public sector".

Service tariffs were defined on the basis of two factors: hotel services and the professional component of the service (representing the effort, skill and risk of service provision). What was paid to physicians was the percentage of the assigned tariff for each service based on the performance of the physicians. This percentage varied between public and private sectors, and created income differences between the sectors. As Participant 10 stated: "In the public sector, on average, the doctor is paid 40% of a professional component of a services tariff compared with 80% in the private sector".

There was a difference in tax rates between private and public sectors in all industries and sectors and it was not specific to the health sector and doctors. Due to the close relationship between private and public health centres, the difference in taxation was one of the factors that accounted for the specialists' tendency to want to work in the private sector. Participant 4 said: "Currently, the public sector income tax is 20% but in the private sector it is 3% to 5%, for the same job".

The imposition of the income ceiling only in public hospitals has exacerbated this income gap. According to some experts, in the public sector, for payments < 100 million Iranian rials, 80% is paid to the doctors, but for higher payments, the percentage share of the doctor is reduced gradually (participants 1 and 8).

Another problem that all the experts agreed upon was delays in paying physicians in the public sector due to inappropriate performance of insurance organizations. As Participant 4 pointed out: "They prefer to get 180–200 million rials this year instead of earning 400 million rials next year".

Owning of private hospital shares by public specialists

One of the factors influencing DP among public sector physicians was being a private hospital shareholder.

Table 2 Main factors affecting specialists' tendency towards DP

Theme	Subtheme	Issue	Type of impact
Financial incentives	Income gap between public and private sectors	Irrational disparity of tariffs	Positive
		Specialists' share of hospitals' income	Positive
		High tax rate on public sector specialists' incomes	Positive
		Income ceiling in public hospitals	Positive
		Delay in payments in public hospitals	Positive
	Owning of private hospital shares by public specialists	Being a beneficiary of public medical specialists as private sector shareholders	Positive
		Use of specialists from their public credibility	Positive
Cultural attitudes about professional identity of physicians	Attitude of the community towards physicians' identity	Importance of the office in recognizing physicians	Positive
		Importance of the office in quality of services provided	Positive
	Attitude of physicians towards their occupation	Relationship between physicians professional identity and having an office	Positive
		Fear of getting away the patients in the absence of the office	Positive
Experience and academic level of specialists	Experience and reputation of specialists	Obliging newly graduates to work in under served areas	Negative
		Inability of young specialists to compete with well-known specialists	Positive
		Owning a medical office license by more experienced specialists	Positive
		Unwillingness of more-experienced specialists to join HTP	Negative
	Academic level of specialists	Upgrading academic specialists	Positive
Controlling approaches in the public sector	Laws and plans supporting being full-time in the public sector	Reducing the gap between public and private tariffs due to HTP	Negative
		Compulsory full-time membership in HTP for new graduates	Negative
		Prohibition of full-time specialists for DP	Negative
		Cooperation of insurance organizations for identifying specialists engaging DP	Negative
	Bureaucratic monitoring mechanisms in public sector versus relative freedom of private sector	Low control of specialists to receive informal fees	Positive
		High occupational bureaucracies	Positive
		Existence of the punitive mechanism such as to complete patient records	Positive
		Lack of commitment of public hospital heads to prohibition of DP	Positive
Available infrastructure for responding to population needs in public sector	Imbalance between facilities in public hospitals with needs of the regions	Inadequate equipment for specialists	Positive
		To provide equipment without regard to stratification of health services in the private sector	Positive
		Lack of adequate hospital infrastructure	Positive
	Incomplete chain of specialized medical services in some public hospitals	Incomplete team of specialists	Positive
		Attracting well-known specialists in the private sector	Positive
		Impossibility of providing a full range of specialized medical services	Positive
		Lack of sustainability of medical teams	Positive

Table 2 **Main factors affecting specialists' tendency towards DP (*concluded*)**

Theme	Subtheme	Issue	Type of impact
Regional characteristics of health service locations	Number of private sector facilities	High capacity of the private sector in metropolitan areas	Positive
	Privileges and attractions of private sector	Higher number of elective cases in the private hospitals	Positive
	Frequency and diversity of visits	To monopolize patients of underserved regions by well-known specialists	Negative
		Low frequency of related medical cases for subspecialists	Positive
		Low patient volume in hospitals	Positive
	Conditions and characteristics of hospitals	Types of hospitals	Positive/ negative
		Reputation of the hospital	Positive/ negative
		Hospital income rate	Positive/ negative
	Different geographical extent of regions	Small size of cities in underserved regions	Negative
	Economic status of communities in different regions	Different rates of referral to public and private sectors	Positive/ negative

DP = dual practice; HTP = health transformation plan.

Some experts believed that the main shareholders of the private hospitals were public sector doctors, which led to an increased tendency towards DP in the private sector. Others believed that experts, in particular, faculty members, use their credibility in the public sector to seek patients in the private sector (Participant 1).

Cultural attitudes about professional identity of physicians

Cultural factors can have a significant effect on human behaviour in the long term. In this study, the behaviour of physicians was partly shaped by community culture through the two following themes.

Attitude of the community towards doctors' identity

The experts in this study considered that societal attitudes were an important factor in changing specialists' behaviour and encouraging them to work in the private sector. According to Participant 4:

The community looks at a doctor who does not have an office, like a student. Patients in the hospital ask us where your office is. Many people may go to the public sector for visiting, but they go to the private sector for surgery. Because they think the public physicians are students or interns and have not enough experience. Also, patients are looking for their doctor's office address for future reference because they think that the services provided in an office have higher quality.

Attitude of physicians towards their occupation

Some doctors felt that their identity was related to having an office. One of them who worked full time in the Ministry of Health said: "Nobody thinks I am a doctor. I have not been wearing white overalls for a long time. People think of a doctor with a white coat" (Participant 4). Experts also stated that some of the doctors who worked at university headquarters tended to move away from the medical profession to the office and private sector for fear of being isolated professionally.

Experience and academic level of specialists

This theme was organized into two subthemes, experience and reputation of specialists and their academic level.

Experience and reputation of specialists

Duration of employment, permanent or temporary employment, and academic degree of specialists directly affected their attitude and capacity for DP. Some experts indicated that, since the majority of young specialists were employed as Zarib K (recruitment contract in which medical specialty graduates who are legally committed to certain obligations fulfil these obligations in a health-related centre), they had a lower level of DP. This was because Zarib-K specialists in the Islamic Republic of Iran have mandatory commitments to work in deprived areas after completing their education, based on current laws (24). In addition, Participant 12 commented: "Young doctors have more energy and can do more working hours. We have given them a residency fee and the other benefits of full-time working. In exchange, they were not permitted to engage in DP". Also, entering the health market is more risky for young doctors because they are less well known and they dare not compete with doctors with an established record in the private sector. So, they stay for several years in the public sector to gain experience (Participant 10).

Experts said that all physicians with DP, especially in underserved areas, were experienced specialists who were not subject to enforcement of the DP prohibition law. These physicians have already fulfilled their obligations and they have an office licence (Participant 8). Participant 13, referring to the Health Transformation Plan (HTP),

which encourages young doctors to become full-time through a number of benefits in exchange for a ban on having an office, believed that since more experienced doctors have a private office, they are less involved in the HTP and they do not need to comply with its rules.

Academic level of specialists

The academic level of specialists was discussed by some participants. As Participant 3 indicated: "Since doctors do not have DP restrictions after acquiring an associate professor's degree, they have more multiple jobs in the private sector".

Controlling approaches in the public sector

There were two subthemes in this theme; one of which decreased DP and the other had an increasing effect. The control approaches of the Iranian government were a factor in the prevalence of DP among specialists.

Laws and plans that support working full time in the public sector

HTP rules have had the effect of decreasing DP, according to the experts' opinions. HTP has controlled the level of DP in the Islamic Republic of Iran through reducing the gap between public and private tariffs, providing compulsory full-time rules for specialists entered in the plan, and abolition of the benefits of being full-time as soon as the authorities become aware of involvement in DP. Universities are aware of physicians' DP through various sources. For example, in coordination and agreement between insurance and universities, the insurance organizations declare the names of full-time public medical specialists, whose stamp and names are registered in the insurance records of private facilities, and which indicates they are also active in private clinics.

Bureaucratic monitoring in public sector versus relative freedom of private sector

Some experts believed that the use of a punitive system as well as the existence of rigid regulations in some university hospitals have increased the migration of doctors to the private sector. It was reported that if doctors do not complete their patients' records or they are delayed at their workplace, regardless of how efficient and effective they are, their payments are deducted (Participant 2).

Some experts argued that private hospitals were more likely to support doctors and sometimes hide doctors' errors in order to maintain their reputation and compete with other private hospitals. The lack of supervision of private hospitals by the Ministry of Health means that there are fewer direct controls on doctors in the private sector compared with the public sector. For example, there are fewer restrictions for receiving informal payments (Participant 2). According to some experts, despite the regulatory mechanisms in the public sector, some managers had no commitment to comply with laws related to full-time work in the public sector. Participant 7 acknowledged that managers and officials who themeselves are currently engaged in DP do not control other doctors involved in DP.

Available infrastructure for responding to the population needs in the public sector

The low level of public sector accountability to the changing needs of the community, mismatching the allocation of resources to the needs of different regions, the lack of proper development in line with the changing needs of the population, and inconsistency in the levels of resource utilization all had a direct effect on the willingness of specialists to engage in DP. This theme included 2 subthemes.

Imbalance of facilities in public hospitals with the needs of the regions

In the public sector, the lack of necessary equipment and infrastructure, such as shortage of space in clinics and number of treatment and operating rooms, had led to no possibility of providing services, and meant there was no service provision for physicians at some times of the day or some days of the week. Participant 4 stated that a full-time faculty member in public hospitals may be working just one day and the other working days they may be free because there are not sufficient operating room spaces or inpatient beds to fill their working time. In contrast, the private sector, without complying with health services stratification regulations, which determine what equipment should be present in each health facility, provides all the necessary equipment and expertise for the hospital. Participant 7 commented: "Equipment in public hospitals has not changed for 15 years. Despite the increase in population, as well as the increase in the number of specialists, the numbers of beds, operating rooms and other facilities have remained constant. In contrast, the private sector has grown tremendously during these years".

Incomplete chain of specialized medical services in some public hospitals

Sometimes the referral of patients to private hospitals occured because of the absence of a complete specialist team. For example, Participant 2 said that some general hospitals do not have a cardiologist to complete treatment, or though a trauma specialist is available, they do not have a neurologist. In addition, public sector teams do not have sufficient stability due to the high turnover of supportive specialists. One of the reasons is that, in public hospitals, most anaesthetists in underserved areas are Zarib K, who work on a compulsory basis for a limited period of time in a hospital, and soon after completing their commitments, they leave the hospital. In turn, the private sector has the complete authority and capacity to attract well-known and specialists on a permanent basis. With regard to the incomplete range of specialized medical services, Participant 4 mentioned that:

In some hospitals, some specialized services are not complete due to lack of doctors. For example, there are only two orthopedic surgeons. As a result, the hospital only has access to orthopaedic services for 10 days a month, and on the other days, the specialists refer their patients to the referal hospitals or to the their private hospitals.

Regional characteristics of health service locations

This theme included six subthemes. The differences in cultural characteristics and the diversity of the regions in the country were expressed as factors affecting the tendency towards DP.

Number of private sector facilities

There was a direct relationship between the number of private sector facilities and DP. The high capacity of the private sector in metropolitan areas increased the probability of working in these centres (Participant 5). Also, "In underserved areas, only provincial centers have private hospitals, and there are only private offices in other cities. Therefore, the possibility of DP in these cities is low and limited to the private office." (Participant 4).

Privileges and attractions of the private sector

The higher number of elective rather than emergency cases in private compared with public hospitals was an attraction for this sector. Participant 2 stated that private hospitals admit patients with fewer problems, therefore reducing conflict and stress for doctors.

Frequency and diversity of visits

The high rates and diversity of visits in the metropolitan as opposed to deprived areas increased the rate of DP in these areas. In underserved regions, due to limited population, visits to the outpatient department were not high. Therefore, only the well-known specialists monopolized patients, and for other new doctors, due to the cost of an office and the low population, DP was not effective. Public hospitals in developed regions have more facilities and more patients, and public hospitals in less developed regions have fewer patients. This adversely affects the income of doctors, which increases their desire for DP to obtain more income (Participant 1).

Conditions and characteristics of hospitals

Conditions and characteristics of hospitals, including their type of activity, were effective factors in DP. Participant 4 stated: "In teaching hospitals, faculty specialists use the capacity of residents to visit their patients and cover their on-call time, and instead spend their working hours in the private sector." Participant 6 stated, "The more specialized the hospital, the more subspecialized physicians are employed, but given the specialty differentiation, the number of referrals for patients decreased, and as a result, the probability of DP increases." Specialists had different behaviour based on the reputation of the hospital. If they worked in more well-known hospitals or hospitals with higher income, their inclination to work in other hospitals was reduced.

Different geographical extent of regions

The small size of cities in underserved regions means that specialist involvement in DP is easily made known, so doctors are not usually involved in DP (Participant 8).

Economic status of communities in different regions

There were fewer referrals to the private sector in low-income areas. Participant 2 stated: "The people in these areas are mostly covered by social insurance and unable to pay the difference between the public and private sector. So, they are willing to wait two days in the public sector, to pay a lower fee". The inclination to work in the private sector is higher in high-income regions; therefore, the private sector was more active and responsive to doctors in this areas.

Discussion

Interviews were an appropriate method to understand participants' experiences and different perspectives. This method can provide meaningful data that are not achievable through quantitative methods (*35*). In addition, considering that this study was carried out after a quantitative study that ranked DP status throughout the country, our findings confirm the factors related to the specialists' tendency towards DP in three groups with high, middle and low rates of DP, and can inform policy-making in developing countries. We identified six main factors that influence the specialists' tendency towards DP.

One of the main factors that encourages specialists to be involved with DP is the difference in payments between the private and public sectors, which is aggravated by the lower tariffs as well as the payment ceiling in the public sector. Similarly, in other studies, income was one of the main factors affecting physicians' behaviour and their decision to undertake DP in countries of all income levels (*36*). In China, despite the complete banning of DP, 29.6% of physicians are in DP for income-related reasons (*37*). In Greece, even with use of constraining mechanisms for DP, physicians tended to receive informal payments (*21*). In Bangladesh, the expansion of DP was a reaction to the low level of public sector remuneration (*18*). Generally, in low-income countries, the government often is not able to finance the public sector, and it pays low salaries to physicians. Thus, physicians get a second job (*38*).

Some studies have shown that DP increases the credibility, sense of value and professional prestige of physicians (*39,40*). Moreover, the behaviour of specialists is influenced by societal culture and attitudes (*41*). It was noteworthy that factors such as managerial interference or relationship with patients, which have been reported in high-income countries, were not considered by the participants in the present study (*42*). Moreover, although career development is a recurring factor in most low-income countries (*42*), it was not a factor in the Islamic Republic of Iran. This was most likely because there are more opportunities for professional development for specialists in the public sector.

Our study showed that, given their experience and reputation, senior specialists have more opportunities to work in private practice than their younger peers have, which confirms the findings of other studies (*43,44*).

Chawla also suggested that specialists were less likely to attend their primary job in the public sector as they grow older (*44,45*). Consistent with our study, in Australia, young physicians tended to become less engaged in DP and devoted part of their time to research and education (*46*). Similar to the Islamic Republic of Iran, in Indonesia and some African countries, new graduate specialists are required to work full time for several years in the public sector (*13*). Moreover, young doctors with less well-known backgrounds do not have the capacity to compete with senior physicians and have less chance to engage in DP (*47*).

With regard to the control mechanisms, in low-income countries, many health workers tend towards DP because of nonflexible mechanisms in the public sector (*13,48*). In fact, the contradiction between bureaucracy and the principles of professionalism in the public sector drives the specialists away from the public sector. This is because, in the public sector, they are expected to perform a series of specific tasks at determined hours. Practically, this rigidity has a negative effect on their autonomy and professional creativity (*20*). In order to increase the effectiveness of control mechanisms, different countries should act in accordance with the particular conditions of the country (*40,49,50*). In low-income countries such as the Islamic Republic of Iran, with low payments and poor working conditions in the public sector, a complete ban on DP might not be feasible, and any such regulations may be ignored by medical specialists and result in them shifting to the private sector (*16*). Therefore, governments should seek mechanisms to compensate the difference in income and other conditions between the sectors and reinforce the competitive power of the public sector (*13*). These mechanisms could include: the financial monitoring of doctors; setting a ceiling for private practice income for public sector physicians; tax-based or insurance-based services; limitation of issuing occupational licenses for private work by specialists; and improving the environment in the public sector by offering nonfinancial incentives such as professional recognition and development opportunities (*20,49*). The implementation of each of these strategies requires strengthening the role of the Ministry of Health as a steward of the health sector.

Our results confirm other studies with regard to the relationship between available infrastructure and DP. In Uganda, surgeons who require advanced diagnostic and surgical equipment have used surgical centres with better facilities (*51*). Basu et al. showed that the public sector encounters difficulties with accessibility of facilities, whereas the private sector has better capacity. Thus, doctors have greater accessibility to therapeutic and nontherapeutic facilities in the private sector (*52*). Kotzee and Couper showed that in South Africa the lack of minimum facilities in the public sector was one of the most important factors for physicians leaving their jobs (*53*). Also, the private sector, due to its nature of profitability, focuses on marketing to attract more patients and increase its profits, including attracting the most prestigious specialists and providing the best equipment and facilities (*13,52*). Moreover, our study showed that the regional characteristics of health service locations was one of the factors driving the physicians' tendency towards DP. Similarly, in Africa, the number of private service providers, surgical facilities, regional population and extent of regional development were the most important factors in DP (*47*). Therefore, in more developed areas where the private sector has better facilities, the chance for specialists to become involved in DP will be greater. Our results suggest that there is similarity between the determinants of DP in the Islamic Republic of Iran and other countries. However, only a small number of studies have examined factors influencing specialists' DP, thus, there is a need for further studies to establish effective mechanisms to manage the factors that influce the tendency towards DP.

The limitations of qualitative studies applied to this study. The main limitation was the small sample size of the qualitative studies. We tried to eliminate this restriction by selecting the most informed and knowledgeable people and analyzing each interview immediately after doing it and enriching each interview with the points raised in the previous interviews. The other limitation was was the possibility of different perceptions of the comments of respondents. In order to compensate for this limitation, we tried to use the member-checking technique. Another disadvantage of this study was that the findings may not be extended to other populations with an equal level of certainty that applies to quantitative studies. For this, we tried to make significant findings through choosing a truly representative sample of the general population from a previously conducted quantitative study.

Conclusion

Based on the results, management of specialists' DP requires a comprehensive and systemic approach. It seems that, in most countries, total prohibition of DP would be unviable, unfeasible and ineffective. In fact, depending on the capacity and conditions of the countries, different approaches can be adopted. Controlling mechanisms such as reforming the tax and health financing system by setting a ceiling for private sector tariffs and for private practice income of public sector physicians could be envisaged as policy choices. Provision of required infrastructure, such as adequate space and equipment for physicians in public hospitals, or enabling DP in some areas, taking into account regional conditions, including private sector capacity and the economic situation of the people, could be a constructive mechanism to keep specialists in the public sector.

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Facteurs influençant la double pratique des médecins en République islamique d'Iran

Résumé

Contexte : La double pratique consiste à cumuler plusieurs activités professionnelles différentes, ce qui a des répercussions sur la prestation de services de santé.

Objectif : Identifier les raisons pour lesquelles les médecins ont tendance à exercer en double pratique en République islamique d'Iran.

Méthodes : Nous avons adopté une approche qualitative visant à identifier les facteurs qui influaient sur la double pratique chez les médecins en 2016. Nous avons appliqué une méthodologie d'échantillonnage raisonnée prenant en compte les aberrations ; des entretiens approfondis et semi-structurés ont été menés auprès de 14 informateurs clés. L'analyse des données a été effectuée parallèlement au recueil de données, à l'aide d'une analyse de contenu thématique avec le logiciel MAXQDA (version 10.0). Les entretiens ont été poursuivis jusqu'à saturation des données. La qualité de l'étude a été assurée en appliquant les critères proposés par Guba et Lincoln.

Résultats : Les résultats des entretiens ont révélé six thèmes et 16 sous-thèmes au regard de la propension des médecins à exercer la double pratique. Les thèmes principaux comprenaient les incitations financières, les attitudes culturelles à propos de l'identité professionnelle des médecins, l'expérience et le niveau universitaire des médecins, la maîtrise des approches dans le secteur public, les infrastructures disponibles pour répondre aux besoins de la population dans le secteur public, ainsi que les caractéristiques régionales concernant l'emplacement des services de santé.

Conclusions : Le recours à la double pratique parmi les médecins est un problème à dimensions multiples, influencé par des facteurs divers tels que les incitations financières, les attitudes culturelles et les infrastructures disponibles. En fonction des capacités et des conditions de chaque pays, le contrôle et la prise en charge de ce phénomène nécessitent l'instauration de mécanismes règlementaires et d'incitations permettant, à long terme, de modifier les différences entre les secteurs privé et public et d'améliorer la motivation des médecins à travailler dans le secteur public.

أسباب ميل الأطباء المتخصصين نحو الممارسة المزدوجة في جمهورية إيران الإسلامية

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الخلاصة

الخلفية: الممارسة المزدوجة تعني أداء عدة وظائف مختلفة في نفس الوقت ولهذا تأثيرات على خدمات الرعاية الصحية المقدمة.

الهدف: التعرف على أسباب ميل الأطباء المختصين نحو الممارسة المزدوجة في «جمهورية إيران الإسلامية».

طرق البحث: استخدمنا نهجًا نوعيًا للتعرف على العوامل التي تؤثر على الممارسة المزدوجة لدى الأخصائيين الطبيين في عام ٢٠١٦. واستخدمنا طريقة عمدية في اختيار العينة لإجراء مقابلات عميقة شبه منظمة مع ١٤ مصدرًا رئيسيًا للمعلومات. حُلِّلت البيانات وجُمِعَت في وقت واحد باستخدام تحليل المحتوى المواضيعي بواسطة برنامج MAXQDA (الإصدار ١٠,٠). واستمرت المقابلات حتى اكتمال البيانات. ولضمان جودة الدراسة روعيت معايير غوبا ولينكولن.

النتائج: أظهرت نتائج المقابلات ستة مواضيع و ١٦ موضوعًا فرعيًا لميل المتخصصين إلى الممارسة المزدوجة. وشملت المواضيع الرئيسية الحوافز المالية، والمواقف الثقافية حول الهوية المهنية للأطباء، والخبرة والمستوى الأكاديمي للمتخصصين، والنهج الرقابي في القطاع العام، والبنية التحتية المتاحة للاستجابة لاحتياجات السكان في القطاع العام، والخصائص الإقليمية لمواقع الخدمات الصحية.

الاستنتاجات: تعد الممارسة المزوجة للأخصائيين الطبيين مشكلة متعددة الأبعاد، وتتأثر بعوامل مختلفة مثل الحوافز المالية والمواقف الثقافية والبنية التحتية المتاحة. وبالنظر إلى قدرات كل بلد وظروفه، تتطلب مراقبة هذه الظاهرة وإدارتها آليات تنظيمية وحوافز حتى يمكنها على المدى الطويل تعديل الاختلافات بين القطاعين العام والخاص وزيادة رغبة الأطباء في العمل في القطاع العام.

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A mapping of nursing and midwifery research in the Eastern Mediterranean Region, 2006–2016

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Abstract

Background: Nurses and midwives constitute the largest group of health care professionals globally. Challenges to these professions make it difficult to set regional priorities for policies and research development.

Aims: The purpose of this study was to map current nursing and midwifery research in the Eastern Mediterranean Region.

Methods: Nursing and midwifery schools were identified by each country's nursing and midwifery board and ministries of education/public health. Information was collected for the years 2006–2016 via surveys, websites, Google scholar and expert informants.

Results: A total of 299 schools were identified and 241 of these were contacted; 85 completed surveys from 15 countries were analysed. A total of 1116 research topics covered by 3287 publications were identified, many of which were clustered into the five World Health Organization priority areas. The least developed areas were disaster management and emergency preparedness.

Conclusions: This study provides a database of nursing and midwifery research in the Region. Some gaps were identified based on the research priorities of the Region, but these gaps could be addressed by close collaboration among local researchers.

Keywords: nursing; midwifery; research; regional priorities & development; Eastern Mediterranean Region

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Introduction

Background

Nurses and midwives constitute the largest group of health care professionals globally (*1*). Their credentials and experience impact their ability to respond to health care crises (*2*). The shortage of nurses combined with political instability and man-made disasters in the World Health Organization (WHO) Eastern Mediterranean Region have hindered their development (*3,4*). The critical role of these professions and the challenges they face are recognized by WHO as major strategic goals (*1*).

The Eastern Mediterranean Region is one of the six WHO regions. It is a diverse region of Arab and non-Arab countries, with varying levels of socioeconomic, political and demographic development, and can be divided into three country groups (*5,6*): Group 1 comprises countries with high income following four decades of continuous socioeconomic development; Group 2 comprises middle-income countries; and group 3 comprise countries of limited resources and low income (*3*). Each group of countries has its own particular features and challenges in terms of health, politics, economy and culture. A recent review showed the leading causes of mortality and disability in Arab countries to be: ischaemic heart disease, stroke, lower respiratory infections, diarrheal diseases, diabetes, road injuries, cirrhosis, preterm birth complications, hypertensive heart disease, congenital anomalies, major depressive disorder and chronic kidney disease (*5*). The characteristics and the spread of these diseases directly impact the nursing and midwifery professions, especially in areas of high deployment and shortages.

Nursing and midwifery in the Region

Nurses and midwives are the front line health care professionals in times of natural and man-made disasters. Their practice, both in the hospital setting and in the community, enhances patient outcomes, promotes and maintains well-being and directly impacts morbidity and mortality (*6*). Therefore, appropriate numbers of qualified nurses and midwives in the right places with appropriate resources are crucial to maintaining successful health care systems (*2*). The Global Strategic Directions for Strengthening Nursing and Midwifery 2016–2020 vision statement is: "Accessible, available, acceptable, quality and cost–effective nursing and midwifery care for all, based on population needs, in support of universal health coverage and the Sustainable Development Goals"(*7*).

However, these goals can only be adequately met when challenges related to work environment, human resources, education, research and regulations are

overcome. More attention to that effect needs to be focused on lack of resources, shortage of qualified professionals, poor access to quality education, lack of research dissemination, lack of regulations and in some cases absence of regulatory bodies (*8–11*).

A meeting was held in Jordan in 2015 with nursing and midwifery officers and stakeholders to discuss these challenges. The lack of in-depth knowledge of the status of the professions was the key finding, highlighting the need for research in the Region covering each country group. The first step suggested was to develop a national database on the current status of the professions and research activities in the Region (*12*).

Research activity

There is limited research activity in the Region due to the lack of researchers and resources and poor dissemination of research results, which leads to poor impact on national policies and practices (*13*). Continuous and vigorous research is a necessity in this complex and highly variable health care context. Conducting research will not only identify gaps in practice but will also reveal new approaches suitable for the care of patients with distressing chronic conditions (*14*). As one of its priorities, the framework for action, Strengthening Nursing and Midwifery in the Region 2015–2025, emphasized the importance of conducting research and translating its outcomes into practice, education and service development (*15*).

Choosing research topics should be based on national and regional health needs, resource availability and the financial benefits associated with conducting and translating the proposed research studies (*16*). The research policy and development programme established by WHO encourages the conduct of health research in the Region by providing assistance and connecting regional and international health research agencies (*16*). There has been an agreement on research priorities for the Region; these are continually discussed in regional meetings (*16*), including meetings of the Advisory Committee on Health Research (*13*), and are the basis of regional calls for research proposals (*16*). The priorities are: strengthening the health care systems; maternal, reproductive and child health and nutrition; noncommunicable diseases; communicable diseases; and emergency preparedness.

These research priorities arise from the current health challenges faced in the Region, communicable and noncommunicable disease surveillance, health promotion, health systems, prevention and access to health care, in addition to maternal and child health, mental health and substance abuse, and disasters and emergencies (*3*). However, although these topics may seem pressing in many areas of this Region, there is limited evidence of the current research activity covering them: with poor documentation, gaps in research cannot be identified. The purpose of this study was to identify the current nursing and midwifery research in the WHO Eastern Mediterranean Region and to assess possibilities for research collaboration.

Methods

Information on nursing and midwifery research for the period 2006–2016 was gathered through contacts with nursing and midwifery regulatory bodies of the 22 countries of the Region (board, federation, order and council), the ministries of higher education and public health, and from the Scientific Society of Arab Nursing Faculties.

The methods used for data collection included a thorough search of nursing and midwifery schools. Surveys were emailed to the deans for data regarding their PhD-holder faculty. These surveys were provided in Arabic, English and French and asked about the number of PhD-holder faculty members in each faculty or department, and their list of publications in the last 10 years, in addition to the exact names of the university and the school/faculty for easier archiving and clustering. Three reminder emails were sent at 2-week intervals. Concurrently, the same data were obtained from schools of nursing and midwifery in the 22 countries using a web-based search. These schools were identified from the Scientific Society of Arab Nursing Faculties website (15 countries) or by Google search and the websites of the respective ministries in each country. Starting with the names of universities, then nursing faculties or departments, we searched for the names of PhD-holder faculty members on the school's website and their research activities; those with no publications listed on the university websites were searched for on Google Scholar for possible retrievals. These publications were then matched with the country and university names under study to ensure accuracy of information. The information obtained by survey and web search for each participating school was examined and duplicates eliminated prior to the analysis. When duplicates were found, data obtained from the surveys were prioritized over those extracted from the web-based search. Data collection was done between July and the end of September 2016.

All data collected from surveys and websites were entered into SPSS, version 24, to generate a list of research topics. The list was then analysed qualitatively by authors to develop themes that fall under the research priorities of the Region. We analysed these themes by country and then collectively by providing the frequency of publications per theme. Frequencies and percentages were used for analysis. The data, including the complete list of publications, are housed at the American University of Beirut, where the research study was conducted in collaboration with the WHO Regional Office for the Eastern Mediterranean.

Results

Schools

During the 3-month study period (July–September, 2016), 299 nursing and midwifery schools were identified in the 22 countries of the Region. Out of these, 241 (80.6%) were accessed via email. The remaining ones either had no ac-

cessible email addresses, or emails could not be delivered to their addresses.

The response rate was 35%, with 85 surveys received from 15 countries. The completed surveys represented 41 out of 241 (17%) schools as follows: Bahrain (1), Egypt (2), Islamic Republic of Iran (5), Iraq (3), Jordan (4), Lebanon (7), Pakistan (1), Palestine (6), Saudi Arabia (2), Somalia (3), Sudan (6) and United Arab Emirates (1).

Data on publications were sought from the remaining 44 schools (18%) by web search as follows: Egypt (7), Islamic Republic of Iran (6), Iraq (1), Jordan (8), Lebanon (1), Oman (1), Pakistan (16), Palestine (1), Qatar (1), Sudan (1) and Yemen (1).

The following countries could not be reached at all despite repeated reminders: Afghanistan, Djibouti, Kuwait, Libya, Morocco, Syrian Arab Republic and Tunisia.

The majority of the collected data came from nursing schools (n = 72; 82%); while only 13 surveys (15%) came from nursing and midwifery schools from four countries (Table 1).

Data on faculty members were provided by 80 schools out of the 85 included (derived from both returned surveys and web-based search). Only 61 schools (71.7%) had PhD-holder faculty (range 1–136, mean 11.2). All the returned surveys included complete faculty publication details. However, a web-based search of the 44 schools revealed only 25 (56.8%) with publications available online.

Table 1 Nursing and midwifery schools (n = 85) in the WHO Region for the Eastern Mediterranean covered in the survey, 2016

Country	No. of schools	
	Nursing	Nursing & midwifery
Bahrain[a]	1	–
Egypt	9	–
Islamic Republic of Iran	3	8
Iraq	4	–
Jordan	12	–
Lebanon	7	1
Oman[b]	1	–
Pakistan	16	1
Palestine	7	–
Qatar[b]	1	–
Saudi Arabia[a]	2	–
Somalia[a]	0	3
Sudan	7	–
United Arab Emirates[a]	1	–
Yemen[b]	1	–
Total	72	13

[a]Information obtained from returned surveys only; [b]information sought from website only; all other data were obtained from both surveys and websites.

Research themes and categories

We extracted 1116 nursing and midwifery research topics. These were then clustered under the 5 themes identified as research priorities in the Region: communicable diseases, noncommunicable diseases, health systems, maternal and child health and disaster management. Other topics that did not fit under these themes were categorized separately as nursing education, pain relief and palliative care, psychometric evaluation, older adult health and population health. The main themes were further divided into detailed categories to capture more topics. The categories under noncommunicable diseases included: cancer, cardiovascular disease, neurological disease, diabetes, respiratory disease, kidney disease and mental illness. Communicable diseases were categorized as infectious disease and infection control studies. Health systems research included topics such as nursing and midwifery workforce, job satisfaction, retention, patient safety and electronic patient records. Maternal and child health included topics such as pregnancy and childbirth, contraception, family planning, counselling, complications, postpartum depression, neonatal care and paediatric intensive care. The total number of publications retrieved was 3287, distributed according to WHO research priorities as follows: noncommunicable diseases 692 (21.0%); maternal and child health 836 (25.4%), health systems 645 (19.6%); communicable diseases 155 (4.7%) and disaster management 30 (0.1%).

The research themes were then clustered by country. Significantly, all the themes were addressed by four countries only: Egypt, Islamic Republic of Iran, Jordan and Lebanon; Iraq, however, addressed all five research priorities. The majority of the countries addressed communicable diseases, noncommunicable diseases, maternal and child health and health systems, which are all research priorities for the Region. Additionally, most countries had publications that addressed nursing education, which does not fall under these priorities.

Table 2 shows the numbers of publications identified within the research themes in the countries of the Region. The total of 3287 publications included 692 on noncommunicable diseases, 836 on maternal and child health, 645 on health systems and 376 on nursing education. In the Islamic Republic of Iran, Tehran, Shiraz, Tabriz and Islamic Republic of Iran universities of medical sciences conducted research in all the research themes and their categories. Jordan University of Science and Technology reported research in all areas except for older adult health, while the University of Jordan had publications in all areas. In Egypt, Cairo University reported research on all themes except for population health and older adult health while the University of Alexandria has publications in all research areas. Aga Khan University in Pakistan reported research in all areas except for older adult health. In Lebanon, the American University of Beirut published in most noncommunicable disease areas, as well as health systems, communicable diseases and maternal and child health, with few studies in disaster and emergency management. Regarding research that does not fall within the WHO priorities,

Table 2 Publications from universities in the countries of the Eastern Mediterranean Region during the period 2006–2016 (*n* = 3287) grouped according to health topic

Country	University (No.)
Noncommunicable diseases (n = 692)	
Bahrain	Royal College of Surgeons in Ireland (RCSI) Medical University of Bahrain (21)
Egypt	Cairo University (27) University of Alexandria (17) Tanta University (22)
Islamic Republic of Iran	Tehran University (54) Shiraz University (53) Tabriz University of Medical Sciences (120) Iran University of Medical Sciences (57) Mashhad University School of Nursing and Midwifery (7)
Iraq	Babylon University (17) Hawler University (2) Baghdad University (6) Sulaimani University (1)
Jordan	Zarqa University (13) Al Al-Bayt University (4) Jordan University of Science and Technology (42) Zeytouna University (24) Applied Science Private University (14) The University of Jordan (82)
Lebanon	American University of Beirut (45) Lebanese American University (7) Université Saint-Joseph (1) Lebanese University (4)
Oman	Sultan Qaboos University (6)
Pakistan	Aga Khan University (10)
Palestine	Al-Najah National University (11) The Arab American University Jenin (7) Al-Azhar University-Gaza (2) Birzeit University (1)
Qatar	University of Calgary in Qatar (3)
Saudi Arabia	King Saud Bin Abdul Aziz University for Health Sciences (KSA) College of Nursing, Jeddah (1)
Sudan	Nahda College (1) Khartoum University (5)
United Arab Emirates	University of Sharjah (5)
Maternal and child health (n = 836)	
Bahrain	RCSI Medical University of Bahrain (1)
Egypt	Cairo University (24) University of Alexandria (17) Tanta University (60)
Islamic Republic of Iran	Tehran University (36) Shiraz University (38) Mashhad School of Nursing Midwifery (15) Tabriz University of Medical Sciences (260) Iran University of Medical Sciences (44)
Iraq	Babylon University (15) Baghdad University (9) Sulaimani University (4)
Jordan	University of Jordan (52) Zarqa University (4) Al Al-Bayt University (15) Jordan University of Science and Technology (76) Applied Science Private University (20) Zeytouna University (6)
Lebanon	University of Balamand (11) American University of Beirut (12) Lebanese University (9) Lebanese American University (3)
Oman	Sultan Qaboos University (10)
Pakistan	Aga Khan University (18)

Table 2 Publications from universities in the countries of the Eastern Mediterranean Region during the period 2006–2016 (*n* = 3287) grouped according to health topic (*continued*)

Country	University (No.)
Palestine	The Arab American University Jenin (5) Al-Najah National University (4) Al-Azhar University – Gaza (2) Birzeit University (19)
Saudi Arabia	Ibn Sina College (1) College of Nursing Jeddah (1)
Sudan	Nahda College (1) Khartoum University (2) Bahri University (1) Al-Neelain University (4) Sudan University of Medical Science and Technology (2)
United Arab Emirates	University of Sharjah (7)
Health systems (n = 645)	
Bahrain	RCSI Medical University of Bahrain (21)
Egypt	Cairo University (6) University of Alexandria (33) Tanta University (21)
Islamic Republic of Iran	Tehran University (89) Shiraz University (33) Mashhad School of Nursing Midwifery (4) Tabriz University of Medical Sciences (85) Iran University of Medical Sciences (66)
Iraq	Babylon University (6) Hawler University (1) Sulaimani University (1) Baghdad University (3)
Jordan	The University of Jordan (56) Al Al-Bayt University (6) Jordan University of Science and Technology (42) Zeytouna University (6) Applied Science Private University (29) Zarqa University (5)
Lebanon	American University of Beirut (39) Lebanese University (3) Lebanese American University (4) University of Balamand (2) Université Saint-Joseph (4)
Oman	Sultan Qaboos (6)
Pakistan	Aga Khan University (38)
Palestine	The Arab American University Jenin (4) Hebron University (6) Al-Najah National University (2) Al-Azhar University – Gaza (1) Birzeit University (5)
Saudi Arabia	College of Nursing Jeddah (6)
Sudan	Bahri University (1) Al-Neelain University (1) Sudan University of Medical Science and Technology (1) Nahda College (1) Khartoum University (2)
United Arab Emirates	University of Sharjah (4)
Yemen	Sanaa University (2)
Communicable diseases (n = 155)	
Bahrain	RCSI Medical University of Bahrain (11)
Egypt	Cairo University (2) University of Alexandria (2) Tanta University (7)
Islamic Republic of Iran	Tehran University (5) Shiraz University (5) Tabriz University of Medical Sciences (19) Iran University of Medical Sciences (5)

Table 2 Publications from universities in the countries of the Eastern Mediterranean Region during the period 2006–2016 (*n* = 3287) grouped according to health topic (*continued*)

Country	University (No.)
Iraq	Babylon University (50)
Jordan	The University of Jordan (4) Applied Science Private University (4) Jordan University of Science and Technology (6)
Lebanon	American University of Beirut (3) Lebanese University (5) Lebanese American University (1)
Oman	Sultan Qaboos University (10)
Pakistan	Aga Khan University (9)
Palestine	Arab American University Jenin (1)
Saudi Arabia	College of Nursing Jeddah (2)
Sudan	Nahda College (2)
Yemen	Sana'a University (2)
Disaster management (n = 30)	
Bahrain	RCSI Medical University of Bahrain (3)
Egypt	Tanta University (2)
Islamic Republic of Iran	Tehran University (3) Shiraz University (2) Tabriz University (5) Iran University of Medical Sciences (1)
Iraq	Babylon University (1) Hawler University (1) Baghdad University (3)
Jordan	The University of Jordan (2) Jordan University of Science and Technology (2) Applied Science Private University (3)
Lebanon	American University of Beirut (7)
Pakistan	Aga Khan University (1)
Palestine	The Arab American University Jenin (1)
United Arab Emirates	University of Sharjah (1)
Nursing education (n = 376)	
Egypt	Cairo University (27) Tanta University (6) University of Alexandria (15)
Islamic Republic of Iran	Tehran University (42) Shiraz University (30) Mashhad School of Nursing Midwifery (3) Tabriz University of Medical Sciences (91) Iran University of Medical Sciences (26)
Lebanon	American University of Beirut (11) Lebanese University (1) Lebanese American University (5) Beirut Arab University (1) University of Balamand (1) Université Saint-Joseph (1)
Oman	Sultan Qaboos University (7)
Pakistan	Aga Khan University (25)
Palestine	Al-Najah National University (2) Birzeit University (1) The Arab American University Jenin (2) Hebron University (2)
Saudi Arabia	Ibn Sina College (1) KSA College of Nursing Jeddah (5)
United Arab Emirates	University of Sharjah (1)
Yemen	Sana'a University (2)

Table 2 Publications from universities in the countries of the Eastern Mediterranean Region during the period 2006–2016 (*n* = 3287) grouped according to health topic (*continued*)

Country	University (No.)
Pain relief and palliative care (n = 102)	
Egypt	Cairo University (2) Tanta University (1) University of Alexandria (3)
Islamic Republic of Iran	Tehran University (7) Shiraz University (6) Tabriz University of Medical Sciences (13) Iran University of Medical Sciences (6)
Iraq	Hawler University (1)
Jordan	The University of Jordan (13) Zarqa University (1) Al Al-Bayt University (1) Applied Science Private University (1) Jordan University of Science and Technology (5)
Lebanon	American University of Beirut (30) Lebanese American University (6)
Oman	Sultan Qaboos University (1)
Pakistan	Aga Khan University (1)
Palestine	The Arab American University Jenin (3)
United Arab Emirates	University of Sharjah (1)
Population health (n = 284)	
Egypt	University of Alexandria (8)
Islamic Republic of Iran	Tehran University (21) Shiraz University (15) Mashhad School of Nursing Midwifery (5) Tabriz University of Medical Sciences (67) Iran University of Medical Sciences (21)
Iraq	Babylon University (5) Hawler University (2)
Jordan	The University of Jordan (53) Zarqa University (4) Al Al-Bayt University (5) Jordan University of Science and Technology (29) Applied Science Private University (2)
Lebanon	American University of Beirut (11) Lebanese University (4) Lebanese American University (3)
Oman	Sultan Qaboos University (3)
Pakistan	Aga Khan University (18)
Palestine	Birzeit University (3) Hebron University (4) Al-Azhar University-Ghaza (1)
Older adult health (n = 63)	
Bahrain	RCSI Medical University of Bahrain (2)
Egypt	University of Alexandria (10) Tanta University (1)
Islamic Republic of Iran	Tehran University (9) Shiraz University (8) Tabriz University of Medical Sciences (10) Iran University of Medical Sciences (6)
Iraq	Babylon University (1) Baghdad University (2) Sulaimani University (1)
Jordan	The University of Jordan (3) Al Al-Bayt University (1)
Lebanon	American University of Beirut (1) Université Saint-Joseph (6)
Qatar	University of Calgary (1)
United Arab Emirates	University of Sharjah (1)

Table 2 Publications from universities in the countries of the Eastern Mediterranean Region during the period 2006–2016 (*n* = 3287) grouped according to health topic (*concluded*)

Country	University (No.)
Psychometric evaluation (n = 104)	
Bahrain	RCSI Medical University of Bahrain (2)
Egypt	Cairo University (1) University of Alexandria (1)
Islamic Republic of Iran	Tehran University (13) Shiraz University (8) Tabriz University of Medical Sciences (15) Iran University of Medical Sciences (9)
Iraq	Baghdad University (1)
Jordan	The University of Jordan (22) Jordan University of Science and Technology (10) Zeytouna University (3) Applied Science Private University (1)
Lebanon	American University of Beirut (6) Lebanese University (2) Lebanese American University (2)
Pakistan	Aga Khan University (5)
Palestine	Al-Najah National University (1)

most of the surveyed schools reported publications in nursing education, but few reported publications specifically addressing older adult health.

Discussion

The aim of this study was to identify the research topics covering nurses and midwives in the WHO Eastern Mediterranean Region and compare them under the research priorities identified by the WHO Regional Office. This research would then facilitate collaboration between countries with similar research interests. Surveys were sent to nursing and midwifery schools and web-based searches were conducted to address these aims. The low response rate may be attributable to the unstable war conditions in Afghanistan, Djibouti, Iraq, Libya, Syrian Arab Republic and Yemen. Other reasons for the low response rate could be the lack of university level nursing and midwifery education or the limited number of PhD-prepared faculty and staff active in research in some of the countries, as may be the case in schools of nursing that are departments within bigger faculties, e.g. medicine or pharmacy, which do not encourage nursing research. Another reason may be the heavy teaching load or lack of funding for research. Our study did not address this issue but it is worth pursuing in future research.

The most studied research topics are in communicable and noncommunicable diseases. Chronic obstructive pulmonary disease and mental health problems were the least studied among the noncommunicable diseases. These findings are surprising considering the high smoking rates and the high prevalence of dementia and Alzheimer's disease in the Region (*17,18*). Although research on nursing and midwifery education is not one of the WHO research priorities listed by the Advisory Committee on Health Research in its meeting in Egypt in 2014 (*19*), it was a topic of research interest in the Region. This could be due to the easier access to study subjects (i.e. students), available resources in universities and the relative ease of conducting such research activity compared with clinical research, where patients are targeted. Additionally, and despite the high numbers of women and children refugees in these countries (*15*), there is a limited number of studies addressing their needs: even though there are millions of refugees and displaced persons in the Region, we identified only 3 publications addressing refugee health.

Other topics of interest are those on health systems such as health policy, quality management, nursing and midwifery workforce and patient satisfaction, which are commonly conducted in hospital settings but are almost absent in community settings, including refugee camps. One topic that has received some attention in the Region is the nursing and midwifery workforce. Job satisfaction, retention and migration of personnel are common concerns in all countries and are reflected in the research activity (*8,20,21*). Research addressing the effectiveness of solutions that tackle the above concerns is highly needed. Possible solutions could include the inclusion of an advanced scope of practice for nurses and midwives including those in remote and rural areas, thus enhancing their autonomy and recognizing their valuable contribution to health care delivery in the countries of the Region.

The least studied research topics are disaster management and emergency preparedness. This finding is similar to the results of a recent scoping review of research in nursing and midwifery (*19*), where no study on disaster and emergency preparedness was identified. The need for research on such topics is pressing in view of the current regional turmoil and instability due to wars and the high influx of refugees. The roles of nurses in disaster management and emergency preparedness

need to be addressed and more rigorously studied.

Looking at research areas in universities, it becomes clear that there is shared expertise across many countries and schools of nursing. The potential for collaboration and networking to advance the state of research is great. The next step would be to identify specific investigators with similar research interests and develop a network to encourage them to collaborate in research. One initiative in this direction is a database that was developed by the University of Jordan Faculty of Nursing that includes publications by all nursing faculty members in Jordan since 1986. It can be searched by name or topic or even research design. The site can be accessed at http://jdnr.ju.edu.jo/home.aspx. Publications by Jordanian nurse researchers and students that were conducted outside Jordan are also included in this database. Other countries may follow suit and develop their own database. However, this endeavour may be taxing and would be better coordinated by a central body. Other initiatives that feed into promoting nursing research and networking in the Region include a Delphi survey conducted by Columbia University that identified research priorities from the perspective of nurse leaders (*22*). The findings of these studies will provide further insight into the gaps in this regard.

The limitations of the study include the low response rate and the lack of research information provided on university websites, thus publications may have been missed. Our research findings could have been richer and more comprehensive with greater data return.

Recommendations

In this study, nursing and midwifery research topics were identified, which will facilitate networking and collaboration among nurse and midwifery researchers of the Region.

The following recommendations can be made.

- University websites need to be updated with faculty research activity, interests and publications.
- A database of the research activity in the Region could be established and regularly updated based on WHO research priorities.
- The website of the Scientific Society of Arab Nursing Faculties needs to be updated to include current research output of member schools.
- Nursing and midwifery researchers should be encouraged to network with other researchers and make their research activities more visible through free websites such as ResearchGate, Google Scholar, etc.

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Cartographie de la recherche concernant les soins infirmiers et obstétricaux dans la Région de la Méditerranée orientale, 2006-2016

Résumé

Contexte : Les infirmières et les sages-femmes constituent le groupe de professionnels de santé le plus important à l'échelle mondiale. Les problèmes auxquels font face ces professions compliquent la définition de priorités au niveau régional en matière de développement de politiques et d'axes de recherche.

Objectif : L'objectif de la présente étude était de recenser les travaux de recherche actuels au regard des soins infirmiers et obstétricaux dans la Région de la Méditerranée orientale.

Méthodes : La liste des écoles d'infirmières et de sages-femmes a été dressée par l'intermédiaire de l'ordre des infirmières et des sages-femmes, et des ministères de l'éducation et de la santé publique de chaque pays. Les informations ont été recueillies pour les années 2006-2016 à l'aide d'enquêtes, via des sites Web, la base de données Google Scholar et grâce à des informateurs experts.

Résultats : Un total de 299 écoles a été recensé, 241 d'entre elles ayant été contactées ; 85 enquêtes provenant de 15 pays ont été analysées. Au total, 1116 thèmes de recherche traités dans 3287 publications ont été dénombrés, beaucoup se concentrant autour des cinq domaines prioritaires de l'Organisation mondiale de la Santé. Les domaines de recherche les moins développés étaient la gestion des catastrophes et la préparation aux situations d'urgence.

Conclusions : La présente étude fournit une base de données des travaux de recherche portant sur les soins infirmiers et obstétricaux dans la Région. Certaines lacunes par rapport aux priorités de recherche de la Région ont été relevées ; elles pourraient cependant être comblées grâce à une collaboration étroite entre les chercheurs locaux.

رسم خريطة بحوث التمريض والقبالة في إقليم شرق المتوسط، ٢٠٠٦–٢٠١٦

هدى أبو سعد هاير، هبة الديك، سمر نورالدين

الخلاصة

الخلفية: تشكل الممرضات والقابلات أكبر مجموعات المهنيين في الرعاية الصحية على الصعيد العالمي. تؤدي التحديات التي تواجه هذه المهن إلى صعوبة تحديد الأولويات الإقليمية لتطوير السياسات والبحوث.

الهدف: الغرض من هذه الدراسة رسم خريطة البحوث التي تجرى حاليًا في مجال التمريض والقبالة في إقليم شرق المتوسط.

طرق البحث: حددت مجالس التمريض والقبالة ووزارات التعليم/ الصحة العامة في كل بلد مدارس/ كليات التمريض والقبالة. وقد جمعنا المعلومات حول السنوات ٢٠٠٦–٢٠١٦ من خلال إجراء مسوحات، ومواقع الإنترنت، وموقع جوجل الأكاديمي والأشخاص ذوي الأهمية كمصادر للمعلومات.

النتائج: وقد حددنا ما مجموعه ٢٩٩ مدرسة/ كلية واتصلنا ب ٢٤١ منها، وحللنا ٨٥ مسحًا متكاملًا مستمدًّا من ١٥ بلدًا. وحددنا من مواضيع البحوث ما مجموعه ١١١٦ موضوعًا بحثيًا غطتها ٣٢٨٧ منشوراً مع تجميع معظمها في ٥ مجالات ذات أولوية لدى منظمة الصحة العالمية. وقد كانت المجالات الأقل تطوراً هي إدارة الكوارث والتأهب لحالات الطوارئ.

الاستنتاجات: وتوفر هذه الدراسة قاعدة بيانات حول بحوث التمريض والقبالة في الإقليم. وحددنا بعض الثغرات استناداً إلى أولويات البحوث في الإقليم، ولكن يمكن معالجة هذه الثغرات بالتعاون الوثيق بين الباحثين المحليين.

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From workforce intelligence to workforce development: advancing the Eastern Mediterranean pharmaceutical workforce for better health outcomes

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Abstract

Background: The pharmaceutical workforce in the World Health Organization (WHO) Eastern Mediterranean Region plays a key role in improving health outcomes through responsible use of drugs and optimizing effective choice and use. Investment in this workforce's development and planning is fundamental to achieving universal health coverage.

Aims: To provide an overview of the pharmacy workforce capacity trends in the Region and emphasize the importance of workforce intelligence for strategic development.

Methods: A review of the literature and global pharmacy workforce studies conducted by the International Pharmaceutical Federation to identify trends and issues in the Region.

Results: The Region has high workforce production capacity compared to other WHO regions but challenges in workforce planning and intelligence strategies persist. Effective workforce planning relies not only on quality intelligence, but also on cross-sectoral coordination and stewardship, and the Pharmaceutical Workforce Development Goals provide countries within the Region with a framework for development.

Conclusion: There is no workforce development without workforce intelligence.

Keywords: workforce development; workforce intelligence, pharmaceutical workforce, Eastern Mediterranean Region, Pharmaceutical Workforce Development Goals

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Introduction

A report commissioned by the Global Health Workforce Alliance and World Health Organization (WHO) for the 3rd Global Human Resources Forum (Recife, Brazil 2013) states that there is no health without a workforce (*1*). However, it is equally axiomatic that there is no health workforce without workforce intelligence; effective human resources for health planning are reliant on understanding the state of health workforce quality, accessibility, acceptability and availability at a national level (and increasingly transnational comparisons, particularly in relation to workforce migration and mobility) (*2,3*). Workforce intelligence provides strategic workforce information to support workforce planning and increased capacity. Strengthening data on human resources for health is a priority for WHO as demonstrated by the recent launch of the National Health Workforce Accounts (*4*). This links to other objectives focused on policy development and investment in human resources for health aligned with population health needs (*5*). Other WHO guidelines recommend governance and planning, including national plans to produce and retain graduates in the health workforce informed by needs and intelligence in the labour market (*6*).

Achieving universal health coverage by 2030, as part of the Sustainable Development Goals (SDGs), depends on access to quality essential health services, and safe and effective use of drugs and vaccines (*7*). Health workforce, health service delivery and access to essential drugs are three of the six health system building blocks of the WHO (*8*). The pharmaceutical workforce plays an integral role in bettering health outcomes through optimizing effective choice and responsible use of drugs (*9*). Pharmaceutical workforce refers to the whole of the pharmacy-related workforce (e.g., registered pharmacist practitioners, pharmaceutical scientists, pharmacy technicians and other pharmacy support workforce cadres, and pre-service students/trainees) working in a diversity of settings (e.g., community, hospital, research and development, industry, military, regulatory and academia) with a diversity of scope of practice. In many countries, pharmacists are the most accessible of all healthcare workers, and as such, are at the forefront of healthcare service delivery (*10*). Investment in the development of a flexible, adaptable, well-distributed and competent pharmaceutical workforce contributes towards strengthening health systems and achieving universal health coverage and the SDGs. This partly explains why pharmacists have been recognized in the indicator selected by the United Nations (UN) to follow up on the achievement of SDG 3: "Ensure healthy lives

and promote well-being for all at all ages", specifically target 3.c that focuses on the health workforce (*11*). In addition to physicians, nursing personnel, midwifery personnel and dentists, the indicator includes the density of pharmacists per population (*12*).

Health workforce planning in the WHO Eastern Mediterranean Region remains underdeveloped and sufficient evidence to inform health sector reform is lacking. In the low- and middle-income countries of the Region, as in other regions of the world, human resources for health systems typically suffer from poor planning and management, geographic and sectoral distribution imbalances, limited educational and training capacities, workforce shortages and underemployment, and a lack of workforce intelligence required to inform needs-based planning (*13*,*14*). As a result of these persistent challenges, researchers have urgently called for the generation of research on the health workforce in the Region (*13*), and priority areas for research include improving planning and management and the development of minimum databases (*14*). Despite this, human resources for health literature on health workers in the Region remain scarce, and where literature is retrieved, it is primarily concentrated on the medical and nursing professions (*13*,*15*). Markedly less is reported about pharmacy workforce issues in the Region (*16*).

Global and regional pharmacy workforce trends

While research into pharmaceutical human resources and pharmacy workforce issues has been garnering more global attention in recent years (*17*,*18*), considerably more is published about other health professionals (*19*). A systematic review of 69 papers published between 1998 and 2008 identified several global trends affecting the pharmacy workforce, including increased feminization and overall distribution imbalances (*20*). In addition to calling for a "more coordinated monitoring and modelling of the pharmacy workforce worldwide", the review also distinctly found that "there were significant shortfalls of published information regarding the pharmacist workforce in developing nations" compared to more developed countries.

Systematic efforts to address this knowledge gap and build a global evidence base on the pharmacy workforce and its issues are being led by the International Pharmaceutical Federation (FIP). FIP is the global professional leadership body representing > 4 million pharmacists and pharmaceutical scientists around the world. FIP has collated global pharmaceutical workforce data since 2006, and global reports on the pharmacy workforce were published in 2006, 2009 and 2012, based on survey data collected from 34, 56 and 90 countries and territories, respectively (*21*–*23*). The 2006 Global Pharmacy Workforce and Migration Report was the first to highlight issues and trends affecting the pharmacy workforce globally. In this report, a call for action is directed to pharmacy regulators and policy-makers in order to strengthen strategic planning and workforce data systems (*21*). The 2009 FIP Global Pharmacy Workforce Report strongly recommended that pharmacy workforce planning be integrated into the broader national health workforce planning (*22*). The 2012 FIP Global Pharmacy Workforce Report stressed the importance of a needs-based approach in the development of a locally relevant workforce plan (*23*).

Analysis of data from 2006, 2009 and 2012 enabled trends to be monitored over the 2006–2012 period. These 6-year trends are reported in the 2015 FIP report, Global Pharmacy Workforce: Intelligence Trends (*24*). The report is the first publication of its kind to provide a baseline on the current growing global trend, regarding capacity building and pharmacist numbers. Matching data across the 3 time points provided an overview of mean percentage change in pharmacist capacity (capacity is measured as density: the number of pharmacists per 10 000 population). All WHO regions have experienced an increase in the density of pharmacists over the period 2006–2012 (Table 1). Countries in the Eastern Mediterranean Region showed large proportional changes in the pharmacist workforce. The mean pharmacist density in the Region increased markedly by 38.5% between 2006 and 2012, recording the highest increase after the Western Pacific Region (43.1%). The analysis was based on 5 countries in the Eastern Mediterranean Region that submitted data to FIP at all data collection points (2006, 2009 and 2012) (*24*). In terms of rate of increase in the same period, the Eastern Mediterranean displayed the highest proportional change in capacity among all WHO regions.

The relatively high production of pharmacists in the Eastern Mediterranean Region can be partly explained by the regional education capacity. The FIP 2013 Global Education Report analysed global pharmacy-graduate production capacity trends (measured as the mean number of graduates per 10 000 population) and found strong correlations between total workforce capacity and the annual graduating cohort ($R^2 = 0.57$, $P < 0.0001$) (*25*). Eleven of 22 countries in the Eastern Mediterranean Region were included in the analysis, and results show that the Region exhibited the second highest production capacity in the world, with the Western Pacific Region demonstrating the highest production and the African Region the lowest. The mean number of graduates per 10 000 population was 0.46 in the Eastern Mediterranean

Table 1 Mean change in pharmacist density 2006–2012

WHO Region	Mean change in pharmacist density 2006–2012 (%)
Africa	14.8
Eastern Mediterranean	38.5
Europe	24.2
Americas	14.3
South East Asia	24.1
Western Pacific	43.1

Region, compared to the total sample mean (n = 109) of 0.36. The report also lists Egypt and Jordan among the countries with the highest graduate production capacity in the world, at 1.46 and 1.20 graduates per 10 000 population, respectively. While the state of the pharmacy workforce varies among the countries in the Eastern Mediterranean Region (26), an increase in the number of pharmacy schools is well documented, with some schools having a positive impact on practice advancement and playing a significant role in supplying pharmacists to neighbouring countries (*27*).

Workforce intelligence for workforce development

FIP has developed a transformative workforce roadmap adopted at the Global Conference on Pharmacy and Pharmaceutical Sciences Education held in Nanjing, China, on 7 and 8 November 2016 (*28*). The workforce roadmap sets out the desired milestones for education and workforce development of pharmacists and pharmaceutical scientists, clearly linked with a global vision for transforming education for pharmacy and pharmaceutical sciences. The Pharmaceutical Workforce Development Goals (PWDGs) have been developed as a measurable, feasible and tangible means to facilitate action-oriented workforce planning and ways of monitoring progress towards global achievement of the workforce vision (*29*). They aim to provide a consistent structure for coherent and comprehensive national workforce development actions.

There are 13 PWDGs, gathered into 3 groups: 1) academy: focus on schools, universities and education providers; 2) professional development: focus on the pharmaceutical workforce; and 3) systems: focus on policy development, governmental strategy and planning, and monitoring systems. The PWDGs are aligned with: UN High-Level Commission on Health Employment and Economic Growth Recommendations and Immediate Actions (*5*); WHO Global Strategy on Human Resources for Health Objectives, Milestones and Policy Options (*2*); and International Labour Organization, Organization for Economic Co-operation and Development and WHO Five-Year Action Plan for Health Employment and Inclusive Economic Growth (2017–2021) (*30*).

Workforce intelligence is one of FIP's transformative global PWDGs. PWDG 12 Workforce Intelligence states that all countries and territories should have a national strategy and corresponding actions to collate and share workforce data and workforce planning activities (skill mix, advanced and specialist practice, and capacity). The development of national monitoring systems can identify workforce trends, which in turn enables decision making on deployment and supply of pharmaceutical workforce. Ideally, this should be linked with stewardship and leadership for professional leadership bodies. Country case studies demonstrate that leadership bodies play a significant role in progressing workforce intelligence strategies that are aligned with national and global health workforce tracer indicators (*31*).

Recent research on the pharmacy workforce in the Eastern Mediterranean Region reported a disconnect between the education, regulation and practice sectors, as well as insufficient engagement of professional organizations and leadership bodies (*27,32*). A recent in-depth study on Jordan found local deficiencies in workforce planning and intelligence that are linked to both suboptimal levels of cross-stakeholder engagement and the lack of national workforce planning strategies – especially important during a witnessed surge in the number of pharmacy schools (*32*). The lack of health workforce planning strategies in a climate of increased production and capacity may have serious implications on the utilization of a health workforce within national health systems. In the case of pharmacy in the Region, the increased production of pharmacists without adequate workforce planning strategies, coupled with the lack of effective regulation and clear role descriptions in affecting both private and public sectors, should raise the concern of policy-makers.

Using workforce intelligence to develop strategic workforce strategies relies on purposeful planning that is linked with labour market needs and dynamics, as well as the production capacity and infrastructure to educate and train. The FIP PWDG on workforce intelligence therefore links closely to other goals such as PWDG 1: Academic Capacity (to support supply-side workforce development agendas); PWDG 13: Workforce Policy Formation (strategies to implement needs-based workforce development) and PWDG 11: Workforce Impact (evidence of the impact of the workforce on patient outcomes).

Conclusion

Using evidence generated from this work, countries and territories in the Eastern Mediterranean Region can identify policy gaps and prioritize the development of workforce planning strategies. They can also learn from other country case studies and adopt approaches and methods based on their needs. It is important to assess trends in the pharmacist workforce against national populations, disease burdens and economic situations. The global pharmaceutical workforce will continue to be monitored and assessed in order to shape workforce development and capacity, thereby realizing the PWDGs. Further work is also needed to develop professional, economic and disease indicators to describe the impact of the pharmaceutical workforce, mainly (though not exclusively) following investment of resources by national economies. Without workforce intelligence data there can be no strategic workforce development.

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De l'information sur les personnels au développement des personnels : faire progresser les personnels œuvrant dans le secteur pharmaceutique en Méditerranée orientale pour de meilleurs résultats sanitaires

Résumé

Contexte : L'utilisation responsable des médicaments et l'optimisation de l'efficacité au niveau des choix et de l'utilisation font des personnels œuvrant dans le domaine pharmaceutique dans la Région de la Méditerranée orientale des facteurs clé dans l'amélioration des résultats sanitaires. C'est pourquoi, il est fondamental d'investir dans le développement et la planification de ces personnels si l'on veut réaliser la couverture sanitaire universelle.

Objectifs : Donner un aperçu des tendances au regard des capacités des personnels œuvrant dans le secteur pharmaceutique dans la Région de Méditerranée orientale et mettre l'accent sur l'importance des informations concernant les personnels en vue d'un développement stratégique.

Méthodes : Une analyse de la littérature et des études mondiales sur les personnels du secteur pharmaceutique a été menée par la Fédération internationale du secteur pharmaceutique afin d'identifier les tendances et les enjeux dans la Région de Méditerranée orientale.

Résultats : La Région de la Méditerranée orientale a de fortes capacités de production de personnels par rapport à d'autres Régions de l'OMS, mais des problèmes concernant les stratégies de planification de ces personnels et d'information à leur égard persistent. Une planification efficace des personnels ne dépend pas seulement de la qualité des informations. Elle exige également une coordination et une gestion intersectorielles, et les objectifs de développement pour les personnels de santé fournissent un cadre de développement pour les pays de la Région.

Conclusion : On ne saurait parler de développement des personnels si l'on ne dispose pas d'informations à ce sujet.

من تجميع المعلومات حول القوى العاملة إلى تطويرها: تحسين القوى العاملة الصيدلانية في إقليم شرق المتوسط من أجل مخرجات صحية أفضل

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الخلاصة

الخلفية: تؤدي القوى العاملة الصيدلانية في إقليم شرق المتوسط دوراً رئيسيا في تحسين المخرجات الصحية من خلال الاستخدام المسؤول للأدوية، وتحسين فعالية اختيار واستخدام المستحضرات الصيدلانية . وهكذا، فإن التخطيط والاستثمار في تطوير القوى العاملة أمر أساسي لتحقيق التغطية الصحية الشاملة.

الأهداف: تقدم هذه المراجعة لمحة عامة عن الاتجاهات في قدرات القوى العاملة الصيدلانية في إقليم شرق المتوسط، وتؤكِّد على أهمية تجميع المعلومات حول القوى العاملة من أجل التطوير الاستراتيجي لها.

طرق البحث: أجرت الاتحادات الدولية للعاملين الصيدلانيين مراجعة للمنشورات وللدراسات حول القوى العاملة الصيدلانية في العالم لتحديد الاتجاهات والمسائل الخاصة بإقليم شرق المتوسط.

النتائج: لدى إقليم شرق المتوسط قدرات عالية من القوى العاملة وإنتاجها مقارنة بالأقاليم الأخرى لمنظمة الصحة العالمية، ولكن استراتيجيات التخطيط وتجميع المعلومات حول القوى العاملة ما زالت مستمرة. لا يقتصر اعتماد التخطيط الفعال للقوى العاملة على جودة المعلومات التي يتم تجميعها، ولكنه يعتمد أيضًا على التنسيق الشامل والإشراف على كامل القطاعات، وتقدم أهداف تطوير القوى العاملة الصيدلانية للإقليم إطارًا للتطوير.

الاستنتاجات: ليس هناك تطوير للقوى العاملة دون تجميع المعلومات حولها.

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Yemen field epidemiology training programme: a tool for strengthening the public health workforce

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Abstract

Background: The shortage of skilled public health workers, especially epidemiologists, remains an important challenge for building effective public health systems in many low-income countries, including Yemen. To address this need, in 2011 the Ministry of Public Health and Population established the Yemen Field Epidemiology Training Programme (Y-FETP).

Aims: To describe the Y-FETP and its strengths and challenges in addressing Yemen's National Health System (NHS) needs.

Methods: We describe the structure and functions of the Y-FETPs and analyse the achievements and challenges of the first 7 years of programme implementation as they relate to the NHS.

Results: The Y-FETP is a postgraduate competency-based training with the objective of strengthening capacity in field epidemiology so that events of public health importance can be detected and investigated in a timely and effective manner. Since its establishment, the Y-FETP has successfully trained 30 health professionals in advanced field epidemiology. Furthermore, trainees investigated over 100 outbreaks, analysed and evaluated 95 surveillance systems, conducted 30 planned studies and presented 70 oral and poster presentations at national and international conferences. The main challenges are low retention of graduates by the NHS and financial unsustainability.

Conclusions: The Y-FETP has strengthened the capacity of the Yemen health workforce and has been instrumental in supporting the NHS, especially during the war and the current crisis and health emergency as the security situation deteriorated and access to outside experts becomes limited. The programme provides a practical example of health systems strengthening through health workforce capacity development that can be replicated in countries with similar health workforce capacity challenges.

Keywords: field epidemiology training, Yemen, health workforce, health systems strengthening

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Introduction

The shortage of skilled public health workers, especially epidemiologists, remains an important challenge for building effective public health systems in many developing countries (*1*). Hence, the World Health Organization (WHO) has included health workforce as one of the key building blocks for strengthening health systems (*2*). Yemen has been identified as one of 7 countries in the Eastern Mediterranean Region facing public health crises with an alarming shortage of curative and preventive health care workers (*3*).

The 2006 WHO Yemen Health Systems Profile shows there is a lack of the basic data, e.g. disease prevalence, regional variation and epidemiological trends, needed for planning (*4*). It also identifies delayed response to outbreaks and epidemics as a major constraint that the national health system is facing and constitutes a priority in reforming the health sector (*4*). Therefore, in Yemen's third Five-Year (2006–2010) Development Plan, an objective was included "to combat epidemics, and endemic and infectious diseases and reduce morbidity and mortality rates" through enhancing health and demographic and environmental education (*5*). To address these needs, the Ministry of Public Health and Population established the Yemen Field Epidemiology Training Programme (Y-FETP) in 2011. This programme is a variant of the international Field Epidemiology Training Programme (FETP) model that was built on the Centers for Disease Control and Prevention (CDC) Epidemic Intelligence Service established in 1951 (*6,7*). The Y-FETP was established as a partnership between the Ministry of Public Health and Population, CDC in Atlanta, Georgia, United States, and WHO in Yemen. Further support was received from the Training Programme in Epidemiology and Public Health Interventions Network (TEPHINET) and the Eastern Mediterranean Public Health Network (EMPHNET). The Y-FETP is a 2-year training programme based on the philosophy of "learning while doing" (*8*). This paper describes the Y-FETP and its successes to date.

The Yemen Field Epidemiology Training Programme

Goals of the programme

The training objectives of the Y-FETP include: build sus-

tainable capacity within the Ministry of Public Health and Population to detect, investigate and respond to outbreaks; analyse and evaluate disease surveillance systems; use population-based health data to estimate the burden of injuries and communicable and noncommunicable diseases; evaluate the impact of health-related interventions; and use data for policy-making and decision-making (*8*). The programme will also support the Ministry of Public Health and Population in meeting the Global Health Security Agenda target of having one trained field epidemiologist per 200 000 population by 2025.

Training curriculum and schedule

The Y-FETP is housed in the Disease Surveillance and Control Directorate in the Curative Services and Primary Health Sector of the Ministry of Public Health and Population. The integration of Y-FETP into the ministry ensures that residents are equipped with the necessary skills to respond to Yemen's needs. The Y-FETP curriculum (*8*) was adapted from CDC's core FETP curriculum (*7,9*), which focuses on preparing residents with the necessary skills to address countries' acute health priorities. Residents spend at least 75% of their time in the field gaining hands-on experience (*8*).

In the first year, Y-FETP residents have both didactic and field trainings; typically, they participate in multiple trainings sessions throughout the year. First, they participate in a 4-week introductory course covering the basic concepts of epidemiology, biostatistics, surveillance and outbreak investigation as well as training on EpiInfo software, focusing on designing questionnaires and entering and analysing data. Then, residents are hosted by surveillance programmes determined by the priorities of the Ministry of Public Health and Population, (Table 1) and the availability of applied learning opportunities and qualified site supervisors. Programmes' supervisors are Ministry of Public Health and Population staff with background in epidemiology/public health; they attend a workshop on the Y-FETP and supervision and mentorship skills before residents are placed in their programmes. They are also invited to attend trainings organized by Y-FETP e.g. EpiInfo statistical software, and outbreak investigation. Supervisors participate in quarterly mentors' workshops, and in co-authoring publications.

During the second year, residents participate in three didactic workshops focusing on advanced epidemiological methods, advance EpiInfo software, and protocol writing, and are placed at technical units in the governorates, national programmes and directorates. They analyse data to document burden of diseases and evaluate data collection systems to recommend appropriate actions for improvement (*8*).

Residents are placed in programmes early so that they can immediately apply their newly acquired skills in responding to Yemen's public health priorities. During their training, Y-FETP residents conduct field activities relevant to their host programmes at national and regional levels, including outbreak investigations, campaigns and surveys (*8*). They perform activities

Table 1 Placement programmes for the Yemen Field Epidemiology Training programme

Training programme	Placement programme
Disease Surveillance and Control General Directorate	National Malaria Control Programme National Tuberculosis Control Programme National AIDS Programme National Schistosomiasis Control Programme Electronic Early Disease Warning System Integrated Disease Surveillance Laboratory Based Surveillance Dengue Surveillance Programme Leishmania Surveillance Programme Influenza Surveillance Programme Blindness Control Programme Rabies Control Programme Soil Transmitted Helminths Control Programme Tobacco Control Programme
General Directorate of Family Health	Expanded Programme for Immunization Nutrition Directorate Integrated Management of Child Illness School Health Directorate
National Central Public Health Laboratories	Communicable Disease Directorate Noncommunicable Disease Directorate
General Directorate of Animal Health	Central Veterinary Laboratory Epidemiology and Surveillance Directorate
Other directorates/programmes	National Oncology Centre Noncommunicable Disease Directorate Emergency and Ambulance Directorate National Blood Transfusion Centre National Camps Programme

that provide direct service to the host programmes by completing the following required core competencies and deliverables for graduation (*8*).

- Analyse surveillance data or programmes/directorates data to document the burden of disease and recommend appropriate actions in brief public health reports for policy- and decision-makers
- Evaluate strengths and challenges of surveillance systems or programmes/directorates data systems and make appropriate recommendations.
- Design and implement epidemiological study on priority public health topics in the particular site, analyse data and draft a manuscript for publication.
- Conduct outbreak investigations and recommend control and prevention measures.
- Submit at least 1 abstract and present at a conference as oral or poster.

A team of programmes' supervisors provides support to Y-FETP residents; they are guided primarily by the Y-FETP director and are supported by the Y-FETP technical advisor, consultant epidemiologist and junior epidemiologist (*10*). Supervisors provide daily support to Y-FETP residents towards fulfilling graduation requirement and providing evaluation of their progress. When required, supervisors and Y-FETP technical staff accompany the residents on relevant outbreak investigations and field activities. Y-FETP Management staff visit the residents at hosting programmes and institutions monthly and hold quarterly meetings with programmes directors and supervisors to discuss the progress of the residents and address any relevant issues.

During the 2-year training, residents provide direct service to the Ministry of Public Health and Population, including training and supervising health workers (e.g. during immunization campaigns, surveys) and participating in special trainings (e.g. International Health Regulations, biosafety and biosecurity, strategic planning, leadership). The residents are also required to actively participate in the bi-weekly Y-FETP meetings and present their work for critique by their peers, technical leadership within the Ministry of Public Health and Population and programme staff.

Upon completion of the requirements, graduating Y-FETP residents receive a certificate from CDC that is co-signed by the Yemen Minister of Public Health and Population (*8*). The graduates are recognized by the Ministry of Public Health and Population as specialists in field epidemiology and are given priority when recruiting for higher rank positions. Several were tasked with directing national programmes. The programme is currently in discussion with the Ministry of Higher Education to recognize the Y-FETP certificate as a professional master's degree.

Major accomplishments

Since Y-FETP was established in 2011, 4 cohorts (n = 46) of residents joined the programme; 76% were from various governorates. Of 34 residents enrolled in the first three cohorts, 30 (88%) graduated; Most residents are physicians (68%), the others are health professionals (e.g. laboratory, pharmacy, nursing) who hold a master's degree or diploma after achieving a university first degree. One veterinarian was enrolled in the first cohort to support One Health.

The following four domains are supported by the Y-FETP.

- **Improve surveillance systems**

  Although surveillance data are collected by numerous programmes, these data were not analysed, interpreted or disseminated in a timely manner to guide public health decision-making or action. Therefore, each Y-FETP resident is required to conduct an analysis and write a report of at least one surveillance system, using case-based or aggregate data, on a disease or an event. This is done in consultation with programme managers to ensure that the analysis focusses on priority issues. The Y-FETP technical staff participate in the meetings to identify the topic/question to be addressed for analysis, discuss the findings and assist the residents to develop appropriate recommendations. These efforts ensure scientific integrity and foster programme ownership and collaboration. To date, Y-FETP residents have completed 60 surveillance analyses (Table 2). They also supported 9 less-established surveillance programmes (e.g. leishmaniasis, schistosomiasis) to improve the quality of the data by designing automated databases using EpiInfo for data entry and analysis (*11*).

  The surveillance system analyses provide an opportunity for the residents to identify potential challenges that are used to guide the evaluation aspects. Residents use the updated CDC Guidelines for Evaluating Public Health Surveillance Systems (*12*), completing 35 evaluations (Table 3). These evaluations ensure that gaps or challenges of public health importance are monitored efficiently and effectively. They focus on system performance to meet stated objectives, and involve assessment of the system attributes, including simplicity, flexibility, data quality, acceptability, sensitivity, positive predictive values, representativeness, timeliness and stability.

  Since residents are placed in Ministry of Public Health and Population priority programmes, the recommendations based on the surveillance systems analyses and evaluations are taken seriously by the Ministry and the programmes. The results provide information that promotes the optimal use of health resources and ensure that the systems operate effectively. The recommendations provide practical guidance to ensure that the system is meeting its stated objectives and to improve quality and efficiency. Although, it may be too soon to show the impact of the surveillance analyses and evaluations, Y-FETP plans

Table 2 Examples of the surveillance systems analyses conducted by Yemen Field Epidemiology Training programme residents

Cohort	Title	Presented at
First	Traumatic injection neuropathy surveillance, Yemen, 1998–2012	
	Rubella surveillance system data analysis, 2008–2011	First Arab World Public Health Conference, Dubai, United Arab Emirates, 4–6 April 2013
	Epidemiological characteristics of human rabies cases in Sana'a city, 2011	
Second	Analysis of 4 injury-reporting data sets at the Ministry of Public Health and Ministry of Interior, Yemen, 2012	4th EMPHNET Regional Conference, Aqaba, Jordan, 28 September–1 October 2015
	Antibiotic resistance profiling of blood stream bacterial infection, National Center of Public Health Laboratories, Yemen, 2012–2014	8th TEPHINET Global Conference, Mexico City, Mexico, 7–11 September 2015
	Epidemiology of soil transmitted helminths and schistosomiasis in schoolchildren, Yemen, 2014	
	Severe acute respiratory infection surveillance analysis, Yemen, 2011–2014	17th International Conference of Infectious Diseases, Hyderabad, India, 1–4 March 2016
Third	Analysis of tuberculosis drug resistance cases enrolled for treatment, 2013–2016	To be submitted to the 6th EMPHNET Regional Conference, Amman, Jordan, 27 and 29 March 2018
	Malaria surveillance system analysis, Yemen, 2011–2015	
	Descriptive analysis for dengue fever and malaria in electronic disease early warning system, Yemen (2015–2016)	

future qualitative and quantitative research to assess improvements in performance.

- **Improve outbreak investigation and response**

The Y-FETP residents and graduates actively participated in investigating and responding to more than 100 outbreaks such as cholera, dengue, rabies, Neisseria meningitis, measles, pertussis, hepatitis, food poisoning, etc. (Table 4). Residents responded to suspected outbreaks early and used high standards during investigations; they also developed recommendations for rapid containment and prevention of future outbreaks. Moreover, they investigated and reported the first occurrence in Yemen of outbreaks of Chikungunya virus, West Nile virus, and Middle East respiratory syndrome coronavirus (MERS-CoV).

Residents are currently participating in the investigation of the "world's worst cholera outbreak" (27 April–10 December 2017), which has led to a cumulative total of 983 333 suspected cases and 2215 deaths (13). The Ministry of Public Health and Population selected Y-FETP 3rd cohort residents as cholera control coordinators in the 10 districts with the highest caseload to provide technical guidance to the district

Table 3 Examples of the surveillance systems evaluations conducted by Yemen Field Epidemiology Training Programme residents

Cohort	Title	Presented at
First	Evaluation of Malaria surveillance system in Al Dhale Governorate Yemen, March 2011	2nd EMPHNET and 5th TEPHNET Regional Conference, 6–9 December 2011, Sharm Al Sheikh, Egypt
	Evaluation of acute flaccid paralysis surveillance system in Ibb Governorate, Yemen, 2013	3rd EMPHNET Regional Conference, Marrakesh, Morocco, 4–7 December 2013
	Evaluation of acute flaccid paralysis surveillance system in the Costal Hadramaut Governorate, Yemen, 2013	
	Evaluation of acute flaccid paralysis surveillance system in the Hodeidah Costal Governorate, Yemen, 2014	4th EMPHNET Regional Conference, Aqaba, Jordan, 28 September–1 October 2015
Second	Evaluation of the electronic diseases early warning system, Sana'a, Yemen, 2014	4th EMPHNET Regional Conference, Aqaba, Jordan, 28 September–1 October 2015
	Measles surveillance system evaluation, Amran Governorate, Yemen, 2014	8th TEPHINET Global Conference, Mexico City, Mexico, 7–11 September 2015
	Evaluation of the Integrated Malaria Surveillance System, Sana'a, Yemen, 2014	
Third	Evaluation of Acute Flaccid Paralysis (AFP) Surveillance System in Yemen, 2010–2015; using secondary data	9th TEPHINET Global Scientific Conference Chiang Mai, Thailand 7–11 August 2017
	Evaluation of multi-drug resistant Tuberculosis surveillance in Yemen 2016	To be submitted to the 6th EMPHNET Regional Conference, Amman, Jordan, 27 and 29 March 2018
	Evaluation of the 2 malaria surveillance systems in Sana'a, Yemen, 2016	

Table 4 Examples of the outbreak investigations conducted by Yemen Field Epidemiology Training programme residents

Cohort	Title	Presented at
First	Dengue or Chikungynya fever outbreak?	First Arab World Public Health Conference, Dubai, United Arab Emirates, 4–6 April 2013,
	Measles outbreak with high fatality at Qufl Shamr district, Hajja Governorate, Yemen, 2012	3rd EMPHNET Regional Conference, Marrakesh, Morocco, 4–7 December 2013
	An outbreak of acute gastroenteritis associated with bottled water in internally displaced persons, Yemen, 2013	
	Mixed outbreak of dengue and West Nile virus, Yemen, 2013	16th ICID, Cape Town, South Africa, 2–5 April 2014
Second	H1N1 outbreak in Hareb Baihaan district, Mareb, Yemen: the challenges and lessons learned, August 2014	Yemeni International Congress on Infectious Diseases, University of Science & Technology Hospital, Sana'a, Yemen, Sana'a, Yemen, 16–18 December 2014
	Fauvism outbreak after charitable food distribution in Al Dhalae Governorate, Yemen, April 2014	8th TEPHINET Global Conference, Mexico City, Mexico, 7–11 September 2015
	Explosive measles outbreak among unvaccinated children due to parent refusal, in Al Jawf Governorate, Yemen, March 2015	4th EMPHNET Regional Conference, Aqaba, Jordan, 28 September–1 October 2015
Third	Outbreak investigation of cutaneous leishmaniasis in Yanaha village, Amran Governorate, Yemen, 2016	9th TEPHINET Global Scientific Conference Chiang Mai, Thailand 7–11 August 2017
	Impact of intervention on dengue outbreak in Baihan district, Shabwah, Yemen, 2016	To be submitted to the 6th EMPHNET Regional Conference, Amman, Jordan, 27 and 29 March 2018
	Cholera outbreak in Heran area, Dhamar Governorate, Yemen, January 2017	

health teams, support microplanning and evaluate the cholera response activities (*11,14*).

- **Conduct public health operations research on priority topics**

  Residents on the programme used sound epidemiologic methods to conduct studies that improve public health programme delivery; they worked closely with the Ministry of Public Health and Population to identify research priorities that highlight health system challenges and help to understand the health problems. Residents used descriptive and analytical designs to identify prevalence and risk factors for communicable and noncommunicable diseases and to investigate health service delivery problems (Table 5). They implemented 30 studies, analysed and interpreted data, made recommendations and produced written reports.

- **Disseminate and use public health information**

  The Y-FETP was designed to develop the foundation for using epidemiological data for decision-making and to disseminate findings and best practices. The programme conducted more than 30 dissemination workshops and meetings to share findings from the surveillance data analyses and evaluations. Furthermore, the programme conducted 9 dissemination workshops to share the findings from planned studies relevant to the Ministry of Public Health and Population programmes and decision-makers at central and governorate level. Some of these workshops were headed by the Minister of Public Health and Population or his deputies. Similarly, after each outbreak investigation, Y-FETP residents and graduates met with relevant stakeholders at the local level to share preliminary findings and recommendations. The teams also presented and discussed the findings with their colleagues and key Ministry of Public Health and Population officials during the biweekly Y-FETP residents' meeting.

  Since its establishment, Y-FETP has presented 46 oral and 24 poster presentations in international, regional and national conferences (Tables 2–5), covering outbreak investigations, surveillance analyses, surveillance evaluations and epidemiological studies. In addition, six articles were published (*14–19*), one is accepted (*20*), and four are under review in peer-reviewed journals. Furthermore, Y-FETP conducted the First and Second National Yemen Field Epidemiology Training Programme Conferences in February 2014 and February 2016, with participation of more than 300 public health professionals from the central and governorate levels as well as partners such as WHO, UNICEF, EMPHNET and regional FETP country programmes (*21,22*).

  Finally, Y-FETP activities and achievements are published on a bilingual (Arabic/English) Y-FETP website (http://www.yfetp.com) that was launched in January 2016. Bilingual quarterly reports are also posted on the website. This website presents a forum for the epidemiology/public health community in Yemen to learn about updated Y-FETP public health activities. The website will also strengthen communication with other FETP programmes in the Region and internationally and foster experience-sharing to improve performance.

Challenges

As a new training programme in Yemen, Y-FETP faces several important challenges, of which the following three need to be addressed promptly in order to achieve the main objective, strengthening the national health system.

Table 5 Examples of the planned studies conducted by Yemen Field Epidemiology Training programme residents

Cohort	Title	Presented at
First	Immunization status of children aged 12–23 months and factors affecting it in rural districts of Alhesen and Nehem, Sana'a Governorate, 2013	
	Factors associated with nonvaccination among children aged 12–23 months living in the Ateq capital city, Shabwa Governorate, 2013	4th EMPHNET Regional Conference, Aqaba, Jordan, 28 September–1 October 2015
	Unintentional injuries among grade 9–12 school students in Sana'a City, Yemen, 2012	
	Knowledge, attitudes and practices relating to cholera among residents of cholera prone and nonprone areas, Abyan, Yemen, 2014	
Second	Burden of road traffic injuries (RTIs) in Sana'a city, Yemen, 2015	
	Risk factors for breast cancer in Hadramout Al Wadi, Yemen, 2011–2015	
	Impact of health education on knowledge, attitude and preventive practices among parents towards dengue fever at Gheel Bawazeer, Hadhramout, Yemen, 2016	
	Default risk factors of severe acute malnourished children from outpatient therapeutic centres, Sana'a City, Yemen, 2015	5th EMPHNET Regional Conference, Marrakesh, Morocco, 6–8 December 2016
	Risk factors of end-stage renal failure among haemodialysis patients in Algomhory Hospital, Sa'adah Governorate, Yemen, 2016	
	Occupational exposure to needle stick injuries and hepatitis B vaccination coverage among clinical laboratory staff, Sana'a City, Yemen, 2015	

- **Low retention by health system**
- National and international migration of health professionals from the public health system has become a major concern which hinders improvement of the quality of the health system in Yemen (*23*). According to the Y-FETP field-book (*8*), it is important that the Ministry of Public Health and Population has a clear career and committed path for all Y-FETP graduates. It is envisaged that Y-FETP graduates would work as field epidemiologists in central directorates, epidemiologists or managers of national disease prevention and control programmes and in leadership positions requiring a high degree of analytic capability. Furthermore, graduates were required to commit to 4 years of service to the Ministry of Public Health and Population (*8*). However, of the 21 Y-FETP graduates, only 28% are still working in the public health system. The rest are either working in Yemen with international organizations, e.g. WHO (43%), and national nongovernmental organizations (5%), outside Yemen as international consultants (19%) or doing postgraduate studies (14%). Departure of Y-FETP graduates from the public health system is usually for better salary or living conditions. Other factors include better working conditions, professional supervision and management, and greater access to education and training opportunities. Therefore, improving public health salaries and working conditions would be useful measures to improve retention. This issue is exacerbated by the war as opportunities for advancement at the Ministry of Public Health and Population have decreased. Nevertheless, it is important to note that 76% are still working in Yemen and 48% are filling positions that were normally filled by international staff. These graduates are better equipped to respond to the current crises in Yemen as they know the country well, are well connected with the communities and can reach difficult or inaccessible areas.
- **Sustainability**
- In addition to the current engagement of the residents by the Ministry of Public Health and Population, material and financial resources to support the Y-FETP programme are important indicators for sustainability (*24*). However, there is limited material support by the Ministry of Public Health and Population (e.g. only office space), and the programme is totally financially dependent on donor support (e.g. TEPHINET, WHO, EMPHNET). Should donor support diminish, the absence of government financial support would have detrimental implications for the sustainability of programme.
- **Political instability, war situation and insecurity**
- The Y-FETP started in 2011, the same time as the uprising in Yemen, so it has never operated under normal circumstances. Only the first Y-FETP cohort graduated in 2014 before the current war that broke out in 2015. As result, after 2015, Y-FETP staff and trainees were unable to attend many relevant trainings and conferences outside Yemen due to visa challenges and difficulties in leaving and returning to the country. Therefore, since the conflict started, much of the training has been conducted in Yemen by Yemeni technical experts. Furthermore, due to insecurity,

three residents from the 2nd cohort fled the capital and were not able to graduate on time. Nevertheless, two of them graduated with the 3rd cohort on 28 February 2018. The programme also managed to enrol the 4th cohort in October 2017.

- Additionally, the current war prevents experts from coming to Yemen for additional technical assistance; this has allowed Yemeni technical professionals to manage the programme.

Conclusion

The Y-FETP work-based training model proved to be an effective tool for strengthening the capacity of the Yemeni health workforce, especially epidemiologists. This is achieved through field experiences in various settings that were able to improve institutional capacity in a variety of public health areas. The programme focusses on surveillance systems, epidemiologic research, response and containment measures for outbreaks and using data for public health policy- and decision-making. It is providing a practical example of health systems strengthening through health workforce capacity development. The programme has been instrumental in supporting Yemen's health system through the war and the current crisis and emergency situations as the security situation deteriorated and access to outside experts became limited. The residents and the graduates have been extremely valuable in supporting the activities of the Ministry of Public Health and Population. This model can be replicated in countries with similar health workforce capacity challenges, and especially during disasters and emergencies.

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Le Programme de formation à l'épidémiologie de terrain au Yémen : un outil de renforcement des capacités des personnels de santé publique

Résumé

Contexte : Dans de nombreux pays à faible revenu, dont le Yémen, la pénurie d'agents de santé publique qualifiés, notamment d'épidémiologistes, demeure un problème important qui entrave la mise en place de systèmes de santé publique efficaces. Afin de pallier ce problème, le ministère de la Santé publique et de la Population a créé le Programme de formation à l'épidémiologie du terrain au Yémen en 2011.

Objectif : Décrire le Programme de formation à l'épidémiologie de terrain du Yémen, ses points forts et ses défis pour répondre aux besoins du système national de santé du Yémen.

Méthodes : Nous décrivons la structure et les fonctions du Programme de formation à l'épidémiologie de terrain du Yémen et analysons les réussites et les obstacles rencontrés au cours des sept premières années de mise en place du programme en examinant leurs rapports avec le système national de santé.

Résultats : Il s'agit d'un programme de formation postuniversitaire axé sur les compétences et visant à renforcer les capacités dans le domaine de l'épidémiologie de terrain, ce qui permettra de détecter des événements de santé publique importants et de les étudier efficacement et en temps utile. Depuis sa création, le Programme a formé avec succès 30 professionnels de santé en épidémiologie de terrain de niveau avancé. De plus, les personnes formées ont examiné plus de 100 flambées épidémiques, analysé et évalué 95 systèmes de surveillance, mené 30 études programmées et effectué 70 exposés oraux et présentations d'affiches lors de conférences nationales et internationales. Les principales difficultés rencontrées sont le faible maintien en poste des diplômés au sein du système national de santé et l'absence de pérennité financière.

Conclusions : Le Programme de formation à l'épidémiologie de terrain a permis de renforcer les capacités des personnels de santé au Yémen et a joué un rôle déterminant en tant que soutien au système national de santé, notamment pendant la guerre, la crise et l'urgence sanitaire actuelles, avec la dégradation de la situation de sécurité et la limitation de l'accès à des experts extérieurs. Ce programme représente un exemple concret de renforcement d'un système de santé grâce au développement des capacités des personnels dans ce secteur et il pourra être reproduit dans d'autres pays présentant des difficultés similaire sur le plan des capacités de leurs personnels de santé.

البرنامج اليمني التدريبي للوبائيات الحقلية: أداة لتعزيز القوى العاملة في الصحة العامة

عبد الواحد السروري، عائشة جمعان، عبد الحكيم الكحلاني

الخلاصة

الخلفية: لا يزال النقص في العمال المهرة في مجال الصحة العامة، ولا سيما في علم الوبائيات، تحدياً هاماً لبناء نظم فعالة للصحة العامة في العديد من البلدان النامية، ومنها اليمن. ولتلبية هذه الاحتياجات أنشأت في عام ٢٠١١ وزارة الصحة العامة والسكان في اليمن البرنامج اليمني التدريبي للوبائيات الحقلية.

الهدف: وصف البرنامج اليمني التدريبي للوبائيات الحقلية، ونقاط القوة والتحديات التي تواجه تلبية احتياجات النظام الصحي الوطني في اليمن.

طرق البحث: وصفنا بنية ووظائف البرنامج اليمني التدريبي للوبائيات الحقلية، وحللنا الإنجازات والتحديات التي واجهت البرنامج خلال السنوات السبعة الأولى من تنفيذه من حيث تعلقها بالنظام الصحي الوطني.

النتائج: إن البرنامج اليمني التدريبي للوبائيات الحقلية هو تدريب في مرحلة الدراسات العليا يستند على الكفاءات ويهدف إلى تعزيز القدرات في مجال علم الوبائيات حتى يمكن كشف الأحداث ذات الأهمية في الصحة العامة ودراستها بطريقة فعالة وفي الوقت المناسب. منذ إنشاء البرنامج اليمني التدريبي للوبائيات الحقلية، تدرب فيه بنجاح ٣٠ من المهنيين الصحيين في مجالات متقدمة من علم الوبائيات الحقلية. وعلاوة على ذلك، درس المتدربون ما يزيد على ١٠٠ وباء، وقيَّموا ٩٥ نظامًا من نظم الترصُّد، وأجروا ٣٠ دراسة مسبقة التخطيط، وقدموا ٧٠ عرضًا شفويًا وملصقًا في مؤتمرات وطنية ودولية. ويتمثل التحدي الرئيسي بانخفاض معدلات احتفاظ النظام الصحي الوطني بالمتخرجين من البرنامج وبغياب الاستقرار المالي.

الاستنتاجات: لقد أدى البرنامج اليمني التدريبي للوبائيات الحقلية إلى تعزيز القدرات لدى القوى العاملة الصحية اليمنية وقام بدور فعال في دعم النظام الصحي الوطني، ولا سيما خلال الحرب والأزمة الحالية وحالة الطوارئ الصحية وما أدت إليه من تدهور في الحالة الأمنية ونقص إمكانية الوصول إلى خبراء خارجيين. ويوفر البرنامج مثالاً عمليًا على تعزيز النظم الصحية من خلال تنمية القدرات في القوى العاملة الصحية، وهو برنامج يمكن تكراره في بلدان تواجه تحديات مماثلة في القدرات لدى القوى العاملة الصحية.

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Implementing an interprofessional education programme in Lebanon: overcoming challenges

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Abstract

Background: The Lebanese American University has a well-functioning inter-professional education (IPE) programme; this is a fundamental pedagogical approach in healthcare education in which students from different professions learn together, ultimately leading to improving the skills of the health care workforce and thus improving patient outcomes. The programme includes nursing, nutrition, medicine, pharmacy and social work students, and has now been running for 6 years.

Aims: This paper aims at describing the implementation of an IPE programme in Lebanon by focusing on how to overcome the main challenges.

Methods: We describe our experience using the categories of challenges developed by Sunguya et al. (2014), where they analysed published reports of IPE programmes in developed countries. We identified three additional challenges that might be relevant throughout the Middle East/North Africa (MENA) region or in countries with similar socioeconomic characteristics.

Results: The challenges encountered in designing and implementing the IPE programme were similar to other programmes: curriculum, leadership, resources, stereotypes and attitudes, variety of students, IPE concept, teaching, enthusiasm, professional jargon and accreditation as well as assessment of learning, security and logistics.

Conclusions: This paper provides data and successful strategies that can be used by planned or implemented programmes in similar socioeconomic contexts in the MENA region.

Keywords: interprofessional education, curriculum, health care, workforce

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Introduction

Interprofessional education (IPE) "occurs when two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes" (*1*). This approach is endorsed by many international health organizations and related accrediting bodies as a means to improve students' learning and patient care (*2–7*). Several studies conducted in Middle Eastern countries show that health profession students are ready for IPE and collaborative practice (*8–11*) and that collaborative practice helps improve patient care and creates positive relationships among health care team members (*9,12–16*). Many health care education programmes worldwide are incorporating IPE under different forms in their curricula (*17*). The objective of this paper is to describe our experience in designing and implementing the IPE programme at the Lebanese American University (LAU) and the strategies used to overcome the challenges encountered.

The university has over 8500 undergraduate, graduate and professional students who study on two campuses that are 35km apart in addition to an affiliated university hospital. The Bachelor of Arts in social work programme and the Bachelor of Science (BSc) and Doctor of Pharmacy programmes were established long ago, while the medical doctorate, BSc in nursing, and BSc in nutrition programmes were established in 2009 and 2010. In 2010 a workgroup was formed among faculty from the five health and social care programmes to develop the learning objectives and structure for an IPE programme. What emerged is a stable and running programme that incorporates both theoretical and clinical aspects.

We describe our experience using the category of challenges developed by Sunguya et al. (*18*), when they analysed published reports of IPE programmes in developed countries. They noted that the challenges identified were "likely relevant to developing countries where resources are even scarcer." Lebanon is a developing country and our experience supports their assertion. We identified three additional challenges that might be relevant throughout the Middle East/North Africa (MENA) region or in countries with similar socioeconomic characteristics.

Implementing interprofessional education: challenges and solutions

Curriculum

Curriculum was identified as the most frequent challenge, occurring in 75% of the programmes Sunguya et al. reviewed (*18*). Challenges mainly included curriculum content, integration, time and schedule, and course rigidity (*16*). In our case, three of the five professional programmes involved were new, yet all five programmes had distinct curricula and different time, schedule and course plans. The workgroup established a mission and programme learning outcomes (Table 1) for IPE. We planned five half-day workshops (which we refer to as IPE steps); community learning activities; and hands-on patient care in the clinical setting, managing to bring together students from all five health and social care programmes at the same time. Students attend the steps over two or three years, depending on their profession; IPE is co-curricular but the workshops are mandatory. The aim is to provide students with common tools for immediate application in their clinical experiences (Tables 1 and 2).

Additionally, we introduced several clinical activities to help students transfer their interprofessional skills to the practice setting. In February 2012, a group of medical, nursing and PharmD students began regular visits to the volunteer outreach clinic in Shatila Palestinian refugee camp. At the clinic, interaction among health care students occurred naturally as they worked together in a small space, supervised by faculty. Bus transportation provided by the university to and from the clinic allowed additional opportunity for interprofessional communication.

Another clinical IPE experience is offered at the university hospital. Multidisciplinary rounds for internal medicine, infectious diseases, nephrology, paediatrics, cardiology and emergency medicine are held twice a week and include medical and pharmacy students and faculty members from both disciplines.

Over 1100 students have attended at least one of the LAU IPE steps since 2012; the entire sequence has been repeated for five cohort groups.

Leadership

Lack of leadership is a challenge that must be overcome when implementing IPE (*18,19*). Poor planning, lack of coordination and lack of administrative support can strongly impede an IPE initiative. We were fortunate to have full leadership support from the beginning for the development of our IPE programme. The university Board of Trustees approved the establishment of the new schools of medicine and nursing with the condition that nursing and medical students have multidisciplinary learning activities. Development of the IPE programme by the IPE workgroup was also included in the University's strategic plan, which substantiated the value and commitment of LAU leaders to IPE. There has been very little turnover in the workgroup, and new members share the same passion for the programme as continuing members, making them the champions of IPE.

Resources

Securing adequate resources is essential to the implementation of IPE in any institution; this includes financial, physical, material and human resources (*1,19*). Sixteen of the 38 programmes reviewed by Sunguya et al. reported this challenge (*18*). At LAU, IPE started as an unbudgeted initiative. The IPE workgroup members have participated in programme development as a component of their service to the university. For the first 2 years, no support staff was dedicated to assist with logistical implementation of activities. Over time, the School of Nursing was able to allocate 0.5 full-time equivalent staff support to the programme.

A total of 75 small group facilitators for the student workshops is needed per year. This is a challenge as there is no budget to compensate for the time faculty dedicate to the programme; because it is co-curricular it is not factored into their teaching workload. When short on facilitators, we have invited medical residents, which turned out to be effective. Funding to cover costs for refreshments, photocopying instructional materials, and transportation to the volunteer outreach clinic was secured through the respective schools, often on a rotational basis. In recognition of the success of the

Table 1 Mapping of the interprofessional education (IPE) steps to the programme outcomes

IPE programme learning outcome	Mapped to IPE step				
	1	2	3	4	5
Recognize expertise, roles, responsibilities and competence of other professionals	X	X	X	X	X
Use effective communication techniques with other professionals to effect change and resolve conflict when providing patient/client care		X	X		X
Develop interprofessional collaboration in health and social care settings	X	X	X		X
Make decisions with other professionals and the patient/client when planning and implementing health and social care		X	X	X	
Develop IPE case conferences, team meetings, and quality improvement activities				X	X
Demonstrate evidence-based interdisciplinary approaches to provide a safe environment for patients/clients and achieve good patient/client outcomes				X	
Resolve ethical issues that arise in health and social care settings			X		X

programme, for 2015–16 the university budget committee allocated an independent budget to the IPE workgroup.

Stereotypes and attitudes

Stereotyping of professions by faculty, students and institutions is another challenge to overcome. Studies show that within the health care team there is little understanding of the roles of other health professionals, what they do and what they know (*9,18,20*). In Lebanon, as in most countries of the MENA region, the medical profession is usually perceived as dominant over other health professions (*16*), while roles of pharmacists and social workers are both misunderstood and underutilized in the clinical setting (*21,22*).

The initial stereotypes of incoming health and social care students are addressed in LAU IPE Step 1 (Table 2). The initial activity in Step 1 is to have each student independently write their assumptions and perceptions about each of the five professions on a worksheet. This is followed by a simulated interprofessional care conference with the roles of all fieve health and social care professionals portrayed. During small group sessions, faculty facilitators provide students with a description of the five professions and a case, discussing the roles, responsibilities and skills of each profession.

We also address stereotyping from a structural perspective in that speakers as well as small group facilitators for the five IPE steps are selected from all five health professions. This conveys to students that faculty from each profession have the knowledge needed to teach an interdisciplinary group of students.

Variety of students

Differences in student characteristics, learning needs, knowledge levels and approaches to care are another challenge (*9,10,15,18*). We have experienced 2 main differences among the student participants: difference in the size of the professional groups and difference in the level of students, undergraduate level (nursing, BSc pharmacy, nutrition, and social work) and post bachelor degree (medical and PharmD). The first problem is mainly due to enrolment in social work, which remains small, so this profession is underrepresented and often missing in some small groups.

As for level differences, we schedule students for each step relative to their first clinical experience rather than year of enrolment, e.g. no students have had clinical experience at Step 1, while all have considerable experience by Steps 4 and 5.

As differences between professions were recognized by participants early on, students learned from each other and were not surprised when confronted with differences of opinion during the case discussions. Additional activities that facilitated student interactions and minimized apprehension include an ice breaker at the beginning of each small group session and refreshment breaks allowing social interaction. Furthermore, since students meet at 5 different sessions over a 2–3 year period, they gradually explore what is common among their learning and practice and comprehend the value and complementarity of different roles to better serve the patient.

Interprofessional education concept

There is ambiguity about best practices for starting an IPE programme (*18*). We faced this ambiguity at LAU as well. For over a year, the workgroup reviewed and discussed the literature. While we were clear on our mission and programme learning outcomes (Table 1), decisions on the methods for delivering content to meet the outcomes took several months.

We used a top-down approach with faculty designing and implementing the IPE programme but without student input since the programme was new to faculty and students. Our IPE programme is an institutionalized programme, with a process for data collection. More work is planned to integrate IPE into the clinical settings, making collaborative practice an inherent part of patient care.

Teaching

Several challenges in teaching have been identified, including faculty familiarity with IPE, experience teaching large groups, different instructional methods, and consensus and consistency of content (*1,16,18*). We addressed familiarity with IPE by sponsoring a faculty retreat to introduce the LAU IPE initiative. To address content familiarity, a facilitator's guide is prepared for each step and sent to volunteer facilitators ahead of the offering. Faculty members facilitating an IPE step are instructed not to lecture or to "give answers" so that a similar learning experience is found among all small groups, independent of the facilitators' background.

We have successfully engaged 75 faculty and clinicians who have served as small group facilitators and/or presenters for the large group lectures. Faculty facilitators were surveyed to solicit their perceptions about the programme (Table 3). Facilitators rated the content as relevant and offered at an appropriate level for students in their own profession. Several people suggested improving orientation of facilitators to the steps.

Concerns related to workload, performance review and promotion, were raised by faculty (workgroup members and facilitators) due to the nature of the IPE programme, being a co-curricular activity and bearing no academic credits. To address their concerns, in 2013 the IPE workgroup prepared a memo on recognizing faculty involvement in interprofessional education, which was distributed to deans and department chairs. The memo summarized the IPE programme and activities of involved faculty and recommended that their IPE activities be recognized through the annual review and promotion processes.

Table 2 Description of the steps for the interprofessional education (IPE) programme at the Lebanese American University

Step	Student learning outcomes	Level	Audience	Activity sequence
1: Introduction to IPE and collaborative practice	Define IPE and collaborative practice Explain own professional role. Identify similarities and differences within and across health and social care professions. List positive aspects of collaborative practice. List barriers to collaborative practice.	Entry	Medicine, Med I Pharmacy, P1 Nursing, BSc I Nutrition, senior Social work, year 1	Baseline RIPLS survey Lecture: intro to IPE and 5 professions Custom made video revealing the roles of the 5 professions in the care of a patient/client Refreshment break; move to break out rooms Ice-breaker Facilitated case discussion Complete evaluation form
2: Inter-professional communication	Describe the contribution of the various health and social care team members to patient/client care. Describe how effective and ineffective communication among health and social care team members can influence the process and outcomes of patient care. Describe communication techniques that foster effective collaboration. Apply communication techniques to collaborate with other health and social care professionals in identifying and addressing the needs of a patient with a chronic health condition.	Intermediate	Medicine, Med II Pharmacy, P2 Nursing, BSc II Nutrition, dietetic interns Social work, junior	Lecture and videos: Team STEPPS, ISBAR; write-down, read-back; "I pass the baton," CUS Refreshment break and move to breakout rooms. Ice breaker Facilitated case discussion Complete evaluation form
3: Teamwork and conflict resolution	Manage disagreements about values, roles, goals and actions that arise among health care professionals and with patients and families. Examine the roles and practices of effective teams. Employ the knowledge and experience of other professions to make informed decisions, while respecting patient and community values and priorities/ preferences for care.	Advanced	Medicine, Med III Pharmacy, P3 Nursing, BSc III Nutrition, dietetic interns Social work, Senior	Lecture and video- Health care teams and conflict management Refreshment break; move to breakout rooms Ice breaker Facilitated case discussion
4: Improving safety of care through inter-professional collaboration	Explain the magnitude of the patient safety crisis Cite the 6 Institute of Medicine aims for crossing the quality chasm. Explain the difference between the person approach and the system approach to understanding medical errors. Identify actions you, as a health professional, can take to improve patient safety.	Advanced	Medicine, Med III/IV Pharmacy, P3 Nursing, BSc III Nutrition, dietetic interns Social work, Senior	
5: Ethics: an inter-professional approach	Identify ethics principles and theories that guide good clinical decision making. Distinguish an ethical dilemma from other types of ethical concerns that arise in the clinical setting. Explain factors that influence ethical decision-making in the clinical setting. Apply ethics principles and a deliberative approach to address ethical concerns and dilemmas in clinical practice. Collaborate with other members of the interprofessional team to address ethical issues.	Advanced	Medicine, Med III/IV Pharmacy, P3 Nursing, BSc III Nutrition, Dietetic interns Social work, Senior	

RIPLS = readiness for interprofessional learning scale.

TeamSTEPPS = team strategies and tools to enhance performance and patient safety.

ISBAR = identify, situation, background, assessment and recommendation.

CUS = I am concerned, I am uncomfortable, this is a safety issue.

Table 3 **Evaluation of the steps in the interprofessional education programme by faculty facilitators (n = 39)**

Evaluation item	Score*				
	Step 1	Step 2	Step 3	Step 4	Step 5
1. The content of this step is important for the students I teach	3.37	3.54	3.50	3.50	3.75
2. The content is at the right level for students	3.41	3.43	3.35	3.27	3.58
3. The amount of content for the topic is about right	3.15	3.29	2.90	2.95	3.25
4. The case study selected helps students apply the content	3.48	3.54	3.40	3.36	3.50
5. I believe the students I teach find the content of this step valuable	3.15	3.18	3.25	3.00	3.42
Overall score for the step	3.31	3.39	3.28	3.22	3.50

Scores range from 1 (strongly disagree) to 4 (strongly agree).

Enthusiasm

Enthusiasm is essential for sustaining an IPE initiative (*18*). Factors that may diminish enthusiasm were found to be use of a top-down planning approach and inadequate understanding of the importance of the programme. At LAU, there has been motivation and enthusiasm for IPE, particularly because of the leadership of the workgroup. The members have been endless champions for the programme within their schools and across the university.

Factors that play negatively on student enthusiasm are commuting from one campus to another for the IPE steps. Transportation is therefore provided, with the schools financing on a rotational basis. Attendance diminishes when IPE steps are scheduled close to exams or other major programme requirements. This is avoided by scheduling IPE steps a year in advance in collaboration with chairs/programme directors.

An IPE certificate of participation is presented to students who have completed at least 4 of the 5 IPE steps, which is important to most students. We are trying to increase student enthusiasm by incorporating IPE within their regular curricula, as well as using our clinical simulation centre more extensively for interprofessional activities. The latter is much appreciated.

Our IPE programme still benefits from the excitement of "being first in Lebanon." This innovative approach to health education helps sustain both students' and faculty enthusiasm.

Professional jargon

Specific terminology for different health professions can also create challenges (*18*). Pharmacy, nursing and medicine use a similar jargon, while nutrition and social work jargon differs. We recognized this early on, particularly because our stakeholder group includes social work. They rarely use the term 'patient', replacing it with the term 'client', and they give 'social care' rather than 'health care' to individuals with health problems. The specific jargon used by each profession is discussed in Step 1 along with specific roles; we have worked to ensure inclusive language throughout the didactic programme. Emphasis on jargon is highlighted in Step 2, which focuses on communication. In line with this, interprofessional language competencies were shown to have an impact on patient outcomes (*23*).

Accreditation

Lack of IPE accreditation standards poses a challenge because it lessens the importance of the effort and leaves faculty without guidelines for planning an IPE programme (*18,24*), although it is already a component of the accreditation standards and programme guidelines of several professions (*4,25,26*). Our schools of pharmacy and nursing have demonstrated how the LAU IPE steps address the standards during recent accreditation visits by the Accreditation Council for Pharmacy Education (*4*) and the Commission on Collegiate Nursing Education (*25*). In the case of pharmacy, the programme was featured on the American Association of Colleges of Pharmacy website as an example of how IPE standards are being met (*27*).

Other challenges encountered

We have faced some challenges that were not revealed in other IPE reports.

How does one assess a learning activity that is co-curricular and involves participants from multiple programmes? The IPE workgroup has collected indirect assessment data including faculty and student readiness for IPE and perceptions of the programme elements (*11*). We have also aligned the learning outcomes of each specific IPE step to the LAU IPE programme learning outcomes and surveyed faculty facilitators to further improve the programme and address problems raised (*28*). To date, however, we have not assessed the short-term or long-term student learning outcomes (*29,30*). We are in the process of developing a method to assess the long-term outcomes of our programme based on international guidelines (*7*).

The volunteer outreach clinic in Shatila camp closed down due to concerns for student and faculty safety. Indeed, many similar clinical services for at-risk populations in the MENA region are probably facing safety concerns.

Location logistics are also a challenge for us: LAU health professions students are spread across 2 campuses and several clinical locations. For IPE workgroup meetings we have the benefit of videoconference capacities; videoconference cannot, however, be used to deliver the IPE steps in its present format, so we arrange bus transportation for students for every step.

Plans for the future

Simulation-based education and deliberate practice has proven superior to traditional clinical education (*31*), also in interprofessional education settings. There is a clinical simulation centre available to all health profession students at LAU. The university also offers a diploma in simulation training with attendees from the different schools, increasing possibilities for creating a good platform for collaborative practice (*32*). Our goal is to build an interprofessional simulation-based education programme.

As mentioned already, IPE improves learners' knowledge, skills and understanding of collaborative practice, but the ultimate goal is improved patient outcome. The Institute of Medicine advocates for opportunities for IPE across the entire learning continuum, "These opportunities are greatest as learners move into the practice environment, where new interdependencies and relationships are formed and utilized" (*33*). Our IPE steps follow the students' progression through each school's academic programme. Clinical IPE activities are needed to bridge the gap between theory and clinical practice. A conference on advancing patient care through interprofessional collaboration was organized by the IPE workgroup in 2016 to introduce collaborative practice to the clinical workforce with 200 participants from Lebanon and the Middle East region (*34*).

Conclusion

At LAU we have encountered most of the implementation challenges identified by others and have addressed them quite successfully. Students' self-reported readiness for interprofessional education before and after the LAU IPE steps, their evaluation of the programme learning outcomes and their satisfaction with the learning experience have been positive overall (*11*).

Lessons learned from our experiences in designing and implementing the IPE programme in a developing country are similar to what others in developed countries have experienced to facilitate the integration of the IPE programme in health education (*19,35*).

Other strategies for success that build on the enthusiasm and dedication of the IPE workgroup are:

- give students practical tools with immediate case-based application at each IPE step;
- have a longitudinal programme, with each student participating over 2–3 years;
- ensure that all professions are represented at each step;
- use a continuous quality improvement approach to study and refine the IPE activities.

We still have challenges to face, mainly to build a framework for measuring the impact of our IPE programme on patient outcomes. Our IPE programme, like most, is a work in progress, yet it has become an inherent part of LAU's 5 health and social care programmes. We share our experience in the hope that others may find some of our strategies useful as they introduce and implement interprofessional education.

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Mise en œuvre d'un programme d'enseignement interprofessionnel au Liban : surmonter les difficultés rencontrées

Résumé

Contexte : L'Université américaine de Beyrouth possède un programme d'enseignement interprofessionnel (EIP) performant ; il suit une approche pédagogique fondamentale pour l'éducation sanitaire, selon laquelle des étudiants provenant de différents corps de métier apprennent ensemble, ce qui, au final, entraîne un développement au niveau des compétences parmi les professionnels de santé et, par conséquent, une amélioration des résultats pour les patients. Ce programme regroupe des étudiants en soins infirmiers, en nutrition, en médecine, en pharmacie et dans le domaine des services sociaux et il fonctionne depuis six ans.

Objectif : Le présent article vise à décrire la mise en œuvre d'un programme d'EIP au Liban en s'attachant plus précisément aux moyens de surmonter les principales difficultés rencontrées.

Méthodes : Nous décrivons notre expérience concernant l'utilisation des catégories de difficultés élaborées par Sunguya et al. (2014) dans leur analyse de rapports publiés sur des programmes d'EIP mis en place dans des pays industrialisés. Nous avons identifié trois difficultés supplémentaires susceptibles de s'appliquer partout dans la région du Moyen-Orient et de l'Afrique du Nord ou dans des pays présentant des caractéristiques socioéconomiques semblables.

Résultats : Les difficultés rencontrées lors de la conception et de la mise en œuvre du programme EIP étaient proches de celles observées avec d'autres programmes : cursus, leadership, ressources, stéréotypes et attitudes, diversité des étudiants, concept de l'EIP, enseignement, enthousiasme, jargon professionnel et accréditation, ainsi que contrôle des connaissances, sécurité et logistique.

Conclusion : Cet article fournit des données et des stratégies probantes qui peuvent être utiles à des programmes futurs ou déjà mis en œuvre dans des contextes socioéconomiques semblables au sein de la région du Moyen-Orient et de l'Afrique du Nord.

تنفيذ برنامج تعليمي لأصحاب المهن المختلفة في لبنان: التغلب على التحديات

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الخلاصة

الخلفية: يوجد في الجامعة اللبنانية الأميركية برنامج فعَّال لتعليم أصحاب المهن المختلفة، وهو مقاربة تربوية أساسية في التعليم في مجال الرعاية الصحية يتعلم فيها طلاب ينتمون إلى مهن مختلفة معًا، مما يؤدي في نهاية المطاف إلى تحسين مهارات القوى العاملة الصحية، وبالتالي تحسين المخرجات الخاصة بالمرضى. يتضمن البرنامج طلابًا في التمريض والتغذية والطب والصيدلة والعمل الاجتماعي وهو برنامج يتواصل تشغيله منذ ٦ سنوات.

الهدف: ويهدف هذا البحث لوصف تنفيذ برنامج تعليم أصحاب المهن المختلفة في لبنان من خلال التركيز على كيفية التغلب على التحديات الرئيسية.

طرق البحث: نصف في هذا التقرير الخبرات التي اكتسبناها باستخدام فئات التحديات التي وضعها سونجويا وزملاؤه (٢٠١٤)، عندما حللوا ونشروا تقارير حول برامج تعليم أصحاب المهن المختلفة في البلدان المتقدمة. لقد حددنا ٣ تحديات إضافية قد تتعلق بجميع أنحاء إقليم الشرق الأوسط وشمال أفريقيا أو بالبلدان ذات السمات الاجتماعية والاقتصادية المماثلة.

النتائج: لقد اتضح لنا أن التحديات التي يواجهها تصميم وتنفيذ برنامج تعليم أصحاب المهن المختلفة كانت مماثلة للتحديات لتي تواجهها البرامج الأخرى: المنهج الدراسي، والقيادة، والموارد، والتصرفات النمطية والمواقف، وتنوع الطلاب، ومفهوم برنامج تعليم أصحاب المهن المختلفة، والتدريس، والحماس، والمصطلحات الفنية و الاعتماد، إلى جانب تقييم التعلم، والأمن واللوجستيات (الاحتياجات اللوجستية).

الاستنتاجات: يقدم هذا البحث البيانات والاستراتيجيات الناجحة التي يمكن استعمالها في البرامج التي يجري التخطيط لها أو تنفيذها في السياقات الاجتماعية والاقتصادية في إقليم الشرق الأوسط وشمال أفريقيا.

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Developing a national competency-based curriculum for technical nurses in Egypt

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Abstract

Nursing in Egypt has evolved over recent decades. Development has accelerated following recent government recognition of the contribution nurses make to healthcare access, quality and delivery. A vision to enhance nursing capacity resulted in a recent mandate requiring all nursing curricula to be competency based. Concurrently, the Educational Development Fund of the Egyptian Cabinet of Ministers drafted a nursing educational plan including a strategy to develop and implement a contextually congruent educational model with proven success comparable to international standards. This report discusses the 4-year curriculum development project designed to upgrade the current technical-level nursing curriculum to a consistent competency-based model. The competency-based educational model will be trialled in 3 technical institutes before nationwide rollout and implementation. Details of the project plan are described, including an overview of curriculum development considerations. This report provides insights for policy-makers and educators embarking on similar health workforce reform and capacity development initiatives.

Keywords: nursing education, curriculum development, institutes and academies, capacity building, Egypt

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Introduction

The population of Egypt was estimated to be > 95.5 million in August 2017 (*1*), distributed across 27 governorates, with 60% resident in rural areas. World Health Organization (WHO) data indicate that 25.2% of the population were under the international poverty line in 2015 (*2*). Improved health service and workforce capacity is a priority for the Egyptian Government. Representatives of the Technical Institutes Directorate of the Egyptian Ministry of Health and Population (MoHP) and the Educational Development Fund (EDF) of the Egyptian Cabinet of Ministers have confirmed the essential role of nurses in Egypt, and focused on strengthening nursing workforce capacity through reforming the nursing education system. Current plans for a new national curriculum represent an initial step in workforce reform and capacity development. The project detailed in this manuscript outlines the EDF plan to develop a national competency-based curriculum (CBC) prototype for technical or second-level nurses in Egypt qualifying under the National Technical Institute system.

Definitions of first- and second-level nurses

The role and scope of practice for first- and second-level nurses is usually defined by the level of the educational programme including: hours of embedded practical experience, geographical jurisdiction, professional regulation, legislation, and local health service policies (*3,4*). Currently, there, is no globally clear definition of a first- or second-level nurse and terminology differs across nations. Titles of second-level nurses range from technical nurses in Egypt (*5*) to enrolled nurses in Australia and New Zealand (*6*), practical nurses in the United Arab Emirates (UAE) (*7*) and associate degree nurses in the United States of America (USA) (*4*). Despite differences in nomenclature, there are some common global features delineating first- and second-level nurses, as outlined in the following examples. 1) Length of training: second-level nurses typically complete a 2-year training programme that may include a 6-month internship. A qualification is issued at either certificate or diploma level. First-level nurses usually complete a 3–4-year training programme culminating in a degree-level qualification. 2) Scope of practice: second-level nurses typically work in roles closely aligned to bedside/direct patient care (*3*), practicing under the supervision of first-level nurses. 3) Educational context: second-level nurses are typically prepared in programmes governed by the vocational rather than the higher education sector. Therefore, programmes are typically delivered from vocationally orientated technical institutes, community colleges or trade schools rather than higher education formally accredited universities.

The project described here is based on the vocational or technical education sector in Egypt; in particular, in

the technical institutes that constitute a major vehicle for the delivery of technical-level education for second-level nurses. Although preparation of second-level nurses also occurs in the Egyptian university sector, this initial government-initiated project focuses on curriculum reform in the 12 technical institutes currently engaged in preparation of technical-level nurses.

Nursing in Egypt

Egypt has a chronic nursing shortage. In 2015, there were 14.8 nurses and midwives for every 10 000 Egyptians (*2*). This shortage, attributed to current working conditions and migration of skilled nurses, negatively affects patient outcomes. Other issues include insufficient resources and funding, maldistribution of nurses geographically and across health services, and a poor public perception of the profession (*8*). A 2012 report of the MoHP estimated that Egypt needs around 44 000 more nurses for the nation (*9*). Regrettably, Egyptian nursing workforce density levels are declining as per the predicted trend for Africa and Middle Eastern nations to 2030. Density levels in 2004 were reported as 1.994 per 1000 population, and dropped over a decade to 1.434 per 1000 in 2014; only half of the global average of 2.92 nurses per 1000 (*10*,*11*).

Challenges for both nursing education and the creation of a positive inflow to nursing workforce numbers include under-resourcing, lack of practical training opportunities and outdated curricula (*11*). Upgraded nursing curricula models will enhance the capacity of the profession and better position nurses as key drivers of health advances (*12*). The vision and strategy of aligning Egyptian health needs in the 21st century with enhanced capacity of the nursing education system will enable Egypt to make progress with identified health indicators (*13*).

Nursing education in Egypt

Entry to the nursing profession follows different pathways with programmes governed by two separate government ministries, namely the MoHP and the Ministry of Higher Education (MoHE). Programmes governed by the MoHP include the technical secondary schools of nursing, which students enter while still completing high school, and the practical nursing programmes within the technical institutes in the vocational education sector. Programmes governed by the MoHE and Nursing Sector Group of the Supreme Council of Universities are for graduate degree-level nurses and above, although technical-level nurses are also educated in the university sector (*9*). The current system supports entry to the nursing profession at three levels: diplomas from secondary schools of nursing, diplomas via technical institutes and/or universities, and degrees via the university sector (*14*). The government of Egypt is leading aligned, but different, nursing education upgrades across the university and vocational education systems, with a view to strengthening both the health workforce and health systems. The government's vision is to ensure that the curriculum under which technical nurses are prepared is competency based and contextually congruent with the health services needs of 21st century Egypt and its people. Simultaneously, the government is progressing degree-level nursing curricula to nationally defined competency-based standards. This work is occurring under the auspices of MoHE and Nursing Sector Group of the Supreme Council of Universities. The National Authority for Quality Assurance and Accreditation of Education (NAQAAE) provides coordinating oversight and holds the accreditation authority to ensure appropriate alignment of the various nursing cadres.

Contextualizing curricula in response to public health challenges in Egypt

Contextualizing a curriculum to locally specific population health and health systems challenges is an essential component of preparing graduates that are best suited to practice in the local environment. The Egyptian healthcare system is diverse, with a mix of public and private providers. A recent assessment confirmed the achievement of social justice (equal access to liberties, rights and opportunities) and fair universal health service coverage as central to improved health outcomes for vulnerable populations and acceptable levels of patient satisfaction (*15*). Challenges facing the Egyptian healthcare system include poor maternal and child health services (especially with regard to maternal and child mortality); high rates of violence against children; high rates of disease (non-communicable, lifestyle-related, and infectious diseases); hospital safety issues; and limited responsiveness to disadvantaged populations (*15*,*16*).

Despite recent improvement, maternal and infant mortality rates in Egypt remain high (*15*,*17*), with 33 maternal deaths per 100 000 live births, and 20 infant deaths per 1000 live births in 2015 (*2*). Although these rates are better than in many poor neighbouring African countries, they do not reflect Egyptian aspirations for healthcare services. In addition, 21.4% of Egyptian children aged < 5 years are stunted and 8.4% are wasted (*2*). Violence against children is another concern, with a recent report indicating around two thirds of children in Cairo, Alexandria and Assiut had experienced physical violence in the past year and 78% had experienced emotional violence (*16*).

Egypt has the highest rate of hepatitis C worldwide (*18*). In 2008, an estimated 14.7% of the population had been infected, with rates higher in Upper Egypt (28%) and around 170 000 new cases each year (*18*). Preventing iatrogenic spread of the disease is a significant challenge from the perspective of health professional education, health service delivery and overall public health management. Large-scale progression of hepatitis C to diseases such as cirrhosis and hepatocellular carcinoma adversely affects life expectancy and places undue strain on factors such as population employability, quality of life and cost of health service delivery. A large proportion of hepatitis C infection is iatrogenic, with major contributing factors being hospital/patient safety issues such as poor infection control and equipment sterilization procedures (*18*). A 2009 study of prevalence of

adverse events in developing countries found that up to 18% of hospital admissions in the Eastern Mediterranean Region were associated with patient harm resulting from medical interventions (*19*). Healthcare-associated infections are common adverse events in developing countries, with increased risk in acute/intensive settings (*20*). Egypt also has high rates of work-related infections (e.g., hepatitis B) among health workers resulting from sharps injuries (*21*). These adverse events may be preventable in 48% of cases (*22*), with increased attention to safe practices and international patient safety goals (e.g., hand hygiene) a mitigating priority. Patient safety is central to quality healthcare, but this is a major challenge in the Egyptian context; therefore, inclusion of principles of infection control is essential in every module of the developing curriculum. Although treatment for hepatitis C is now available, it is largely unaffordable for most of the currently infected communities in Egypt (*18*).

Leading causes of adult mortality in Egypt include ischemic heart disease and stroke (*17*). Rates of lifestyle-associated health problems are increasing, with the prevalence of risk factors such as obesity and smoking being significantly higher than averages in the Region (*17*). Access to healthcare in Egypt remains inequitable, with health challenges disproportionally affecting poor people, children and women (*16*). In particular, there are gaps between rural and urban populations and different regions (*23*). Upgrading the national nursing education standards and curriculum is important in addressing these issues. Inclusion of contextually relevant themes in the curriculum is particularly important, with priority required in the development of nursing competencies related to health prevention, health promotion, primary healthcare, maternal and child health, patient safety, infection control, and prevention and management of noncommunicable diseases.

Mandate for change

The Egyptian Constitution (January 2014, Article 18) states that, "Every citizen is entitled to health and to comprehensive health care with quality criteria" (*24*). To realise this right to health, the healthcare system must be upgraded to respond to population health and health workforce challenges. A key enabler is strengthening nursing education and workforce capacity to enhance the capacity of the profession to respond to Egyptian-specific health priorities.

Project methodology

The curriculum upgrade project arises from agreement between the MoHP Technical Institutes Directorate and the Egyptian Cabinet of Ministers via the EDF, who have been mandated to design and deliver the project. The EDF vision is to develop "innovative educational models at school and technical education levels with high quality to satisfy market needs" (*25*). The aligned mission is to develop and implement educational prototype models with proven success comparable with international standards. This EDF-led project will upgrade the national curricula for various national education programmes, including the 2-year Diploma in Nursing for technical-level nurses.

The planning approach is ambitious, but incrementally pragmatic. Progressive enhancements have occurred over recent years; for example, the now-enacted introduction of the minimum of 12 years of general education as a prerequisite entry requirement for nursing, with more changes scheduled in the future (*26*). Further development plans include a move from older-style curricula to CBCs for higher education and vocational/technical education-level programmes, requiring rigor and expertise in development. The project is based on a mutual agreement between the EDF and MOHP to develop and upgrade nursing education across the 12 nursing institutes in Egypt (Figure 1).

The vision of the Egyptian government, as translated to the project development team, is to undertake a process of technical-level curriculum reform that will strengthen nursing education and ensure that graduating nurses are prepared with the competencies to have an effective impact on the aforementioned population health challenges.

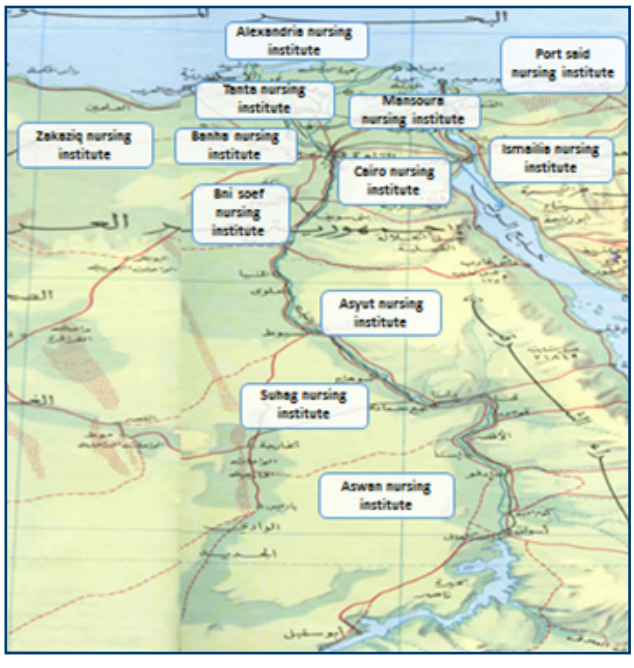
External expertise

Following an invitation from the EDF, the Aga Khan University (AKU) (*27*) responded to provide expert guidance on how to develop a CBC and transition to competency-based education (CBE). AKU is an entity within the Aga Khan Development Network, which has a long-standing history in capacity development support in Egypt. AKU drew together a team of four nursing education experts with experience and skill sets best suited to supporting existing in-country efforts. The team was chosen based on their collective experience in living and working in in the Middle East and North Africa; proven experience and publication in competency-based nursing education; and current active engagement in senior nursing education roles. Inclusion of an Arabic speaker provides assistance in any discussion in which a language barrier might impede understanding of the more detailed concepts of CBE or nursing education and curriculum development. The externally identified expertise provides additional support to a carefully selected team of Egyptian health professional educators who will develop the revised curriculum throughout the 4-year project. Engagement began in July 2017, with an initial series of workshops designed to equip the Egyptian project team with a clear understanding of CBCs in the field of technical/practical nursing education, and key steps involved in upgrading the existing curricula.

Current curricula

Many curricula in low- and middle-income nations remain based on earlier models of nursing education. Characteristics of earlier models include: didactic teaching styles, the nurse's role conceptualized as the doctor's "handmaiden", and adoption of apprenticeship hospital- and task-based models (*28*). The current structure of Egyptian curricula for technical nurses is consistent with

Figure 1 Location of technical institutes in Egypt



these characteristics (Table 1), with many subjects taught by medical rather than nursing staff. These curricula, designed for an earlier era, need redesigning to reflect the rapidly changing demographic landscape and healthcare needs (*29*).

Three-stage project design

The project involves three distinct stages over a 4-year period: 1) design phase of 9–12 months; 2) pilot/validation phase of 2.5 years; and 3) evaluation and sign-off for national rollout of the developed curriculum involving a 9-month implementation process (Figure 2). During the (current) 12-month curriculum design stage, MOHP and EDF leaders have engaged in global consultations, with particular consideration of nursing education standards defined by the European Union (*30*,*31*). Partnerships with external experts, review of global standards, establishing a curriculum development team, curriculum development workshops, and stakeholder consultations provide a robust platform to support development of the contextually relevant CBCs for technical-level nurses in Egypt. Conclusion of the design stage includes formal EDF sign-off on the curriculum model and content, and agreement to enter the pilot/validation stage. Validation will occur in three carefully selected institutes. The curriculum will be piloted in these institutes over the 2-year programme and 6-month internship cycle. Piloting of the new curriculum will occur closely with development of student admission, progression and completion policies, along with monitoring, evaluation, revision, regular feedback and internal/external audit of the education process. Lessons and findings from the design and pilot phases of the project will inform the approved curriculum for formal national rollout. Following approval, the project will enter the final stage and the new curriculum will be rolled out nationally across the 12 technical institutes. The mandate for accreditation and ongoing quality control will rest with relevant educational and professional quality assurance and accreditation agencies, such as the MoHP Nursing Syndicate and the National Authority of Educational Quality Assurance and Accreditation.

Considerations in curriculum development and design

A number of carefully sequenced considerations should inform the curriculum design process, including agreement on terminology, curriculum structure, content, and theory-to-practice considerations. Fit with Egyptian culture, context and identified health needs is equally important. It is envisaged that the final product will result in a curriculum focused on developing nursing competencies in both the art and science of nursing, promotion of health and prevention of illness, patient safety, education and advocacy, and supporting progression towards the United Nations Sustainable Development Goals (*32*).

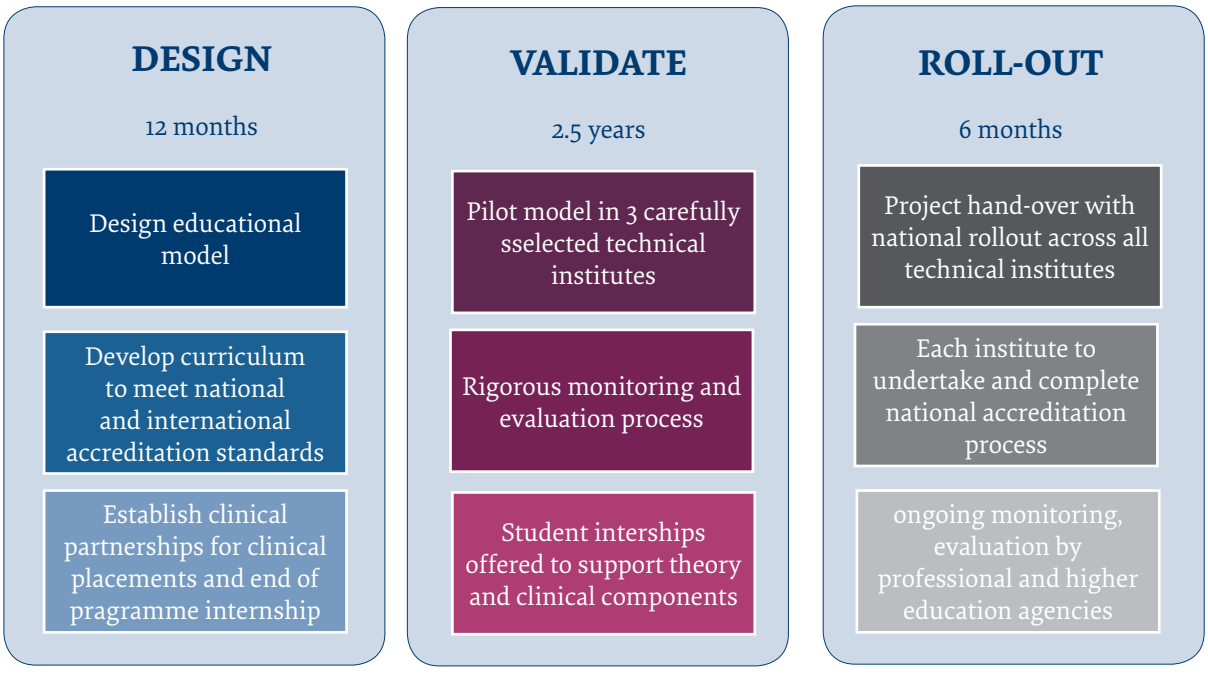
Defining competence and competency

Multiple definitions of competence and competency exist with no apparent global consensus. Working definitions used in this project consider competence as a generic term reflecting a dynamic combination of knowledge/understanding, skills and abilities, defined as a person's overall capacity to perform a given role, including both capability and performance, and involving observable/

Table 1 Current curriculum content

Modules covered in the current technical nursing curriculum	
1. Nursing fundamentals	11. Infection control
2. Maternal health and nursing	12. Psychology
3. Paediatric medicine and nursing	13. Educational technology
4. Anatomy	14. Basic nutrition
5. Adult health nursing	15. Medical sociology
6. Psychiatric nursing	16. Applied clinical nutrition
7. Nursing management	17. Geriatric nursing
8. Epidemiology	18. Free study
9. Pathophysiology	19. Statistics of medical registration
10. Pharmacology	

Figure 2 Three-stage competency-based curriculum development project



unobservable attributes (attitudes, values and judgment ability) (*33*). Competence reflects what it means to be a professional (*34*). Competency refers to an observable and measureable quality of a health professional that integrates multiple components (knowledge, skills, values and attitudes), and can be defined as the specific ability to perform work activities consistently to agreed standards over a range of contexts/conditions, and perform these tasks safely and effectively in a specific health workforce role (*33*). Competency describes a specific skill and competence the ability to perform that skill (*34*).

The International Bureau of Education defines CBC as a curriculum that "emphasizes the complex outcomes of a learning process (i.e., knowledge, skills and attitudes to be applied by learners) rather than focusing on what learners are expected to learn about in terms of traditionally defined subject content" (*35*). Another definition suggests that a CBC "incorporates modes of instruction and assessment efforts designed to evaluate mastery of learning by students through their demonstration of the knowledge, attitudes, values, skills and behaviours required for the degree sought" (*36*). CBCs should be learner-centred and adapt to changing needs of students, teachers and communities. Such curricula are designed around key competences/competencies, focusing on learning outcomes and graduate competencies and require demonstrated attainment of specific outcomes before progression (*37*).

Global and regional guidelines and resources

A number of globally and regionally developed guidelines and resources are available to the project team to guide curriculum development, including the National League of Nursing guide regarding graduate outcomes and competencies (*38*); the WHO Global Standards for Initial Preparation of Nurses and Midwives (*39*); and the European Standards for Nursing and Midwifery programmes (*31*). Further guidance is available by accessing the recently released curriculum prototypes for nursing and midwifery education published by the WHO Regional Office for Africa (*40*,*41*). The recently developed patient safety framework for nursing students is of particular relevance to ensure the revised curriculum prepares graduates with competencies to address infection control and related patient safety issues (*42*). While these resources were useful, a key challenge was that they were primarily designed to guide degree-level nursing education. With the exception of the National League of Nursing resource, few resources are currently available to guide the development of second-level nursing education programmes.

Moving towards CBE

It is recognized that educational reform is difficult to achieve and successful implementation is slow. Changing to a competency-based model presents administrative challenges (*37*,*43*). Such a change is more than a paper exercise of upgrading a written curriculum. It involves multiple aligned activities including: understanding differences between traditional curricula and CBCs; aligning developments with global standards in nursing education; basing learning on best practices in known educational theories; embedding culturally relevant models of care; supporting faculty development; and building partnerships for effective clinical learning environments (*44*). As highlighted, it is important to ensure alignment of new curricula with global standards while reflecting local culture, context and population health needs (*37*).

Transitioning to CBCs resonates with Florence Nightingale's call for change > 150 years ago, when she positioned nurses and nursing knowledge as greater than knowledge and technical skills alone. She challenged nurses to develop practice competencies focused on providing a safe and caring environment, doing no harm and advocating for patients, while promoting principles of egalitarianism and human rights, and demonstrating nursing leadership and critical thinking (*45*).

Nursing role

Changing social and political contexts and population characteristics nationally and globally have major implications for nursing. Nurses are increasingly recognised as partners in care. As the largest health professional grouping in the health sector, they have the capacity to influence health service outcomes (*46*). To maximise this potential, it is essential that the CBC in Egypt enables nurses to practice to full capacity. CBCs engage learners with a focus on the competencies of critical thinking, leadership, problem solving, patient safety and ethical practice. Common themes in CBC development include designs that can be tailored to individual learners; enabling the development of clinical judgment and leadership capacity; and being based on achievement of competencies using evidence-based best practice and recognized approaches to teaching and learning, such as clinical simulation and self-directed and blended learning. CBCs also embrace adult learning principles and offer opportunities for relevant multidisciplinary content and learning experiences. Development of critical thinking is central to enhancing nursing roles and scaling up nursing workforce capacity: "The most important practical lesson that can be given to nurses is to teach them what to observe – how to observe – what symptoms indicate improvement – what the reverse – which are of importance – which are of none" (*47*). Given the current disease burden, enhanced nursing roles are essential, rather than a high level of reliance on doctors alone (*48*).

Alignment with National Academic Reference Standards (NARS)

Parallel to this project, Egypt has embarked on quality improvement initiatives across its health and education sectors, including developing NARS in various disciplines (including nursing). NARS for nursing (*49*) are designed for baccalaureate-level nurses. Launched in April 2017, they represent a first step toward a nationally approved scope of practice and standards for first-level registered nurses (RNs). These developments symbolize the response of the Egyptian government to increasing population expectations of consistent accountability and clarity with respect to competencies that can be expected from all health practitioners at all levels in the workforce. NARS nursing competencies are structured in five domains: professional and ethical practice; holistic patient-centred care; managing people, quality and work environment; informatics and technology; and interprofessional communication.

Development of a similar framework is needed for technical-level nurses; meantime, adopting a consistent framework across all levels of the nursing workforce will facilitate smoother career pathways for nurses aspiring to upgrade from technical- to BScN-level qualifications.

Defining scope of practice for technical-level nurses

Currently, Egypt does not have nationally agreed or published scopes of practice for the various cadres within the nursing workforce. Therefore, a clear starting point is identifying a range of global descriptions, standards and graduate outcomes for practical or second-level nurses compared with first-level RNs. Terminology used to describe this nursing workforce group differs around the world; for example, the American associate degree, the New Zealand and Australian enrolled nurse, and the UAE practical-level nurse. In addition, there are differences in the length of programmes for these nurses, with some being 3-year programmes that can bridge to a BScN. Despite these differences, the scope of practice is consistently outlined in similar ways across different regions, with second-level nurses described as being accountable for their own practice but working under the delegated authority of a fully qualified RN/first-level nurse, as illustrated by the following Australian example. "An enrolled nurse is a person who provides nursing care under the direct or indirect supervision of a registered nurse … Enrolled nurses are accountable for their own practice and remain responsible to a registered nurse for the delegated care." (*50*).

An important first step for the curriculum team is to draft the scope of practice on which technical nurse graduate outcomes and competency-based expectations will be based. Global benchmarks from the USA, Australia and UAE will be sourced and aligned with the NARS domains. For example, the NARS competency, "provides holistic and evidence-based nursing care in different practice settings", resonates with requirements for UAE practical nurses, Australia/New Zealand enrolled nurses and American associate nurses. Although specific details of this domain differ across these countries, common elements include factors such as optimizing patient care and supporting patient involvement in care. Table 2 presents examples of NARS registered nurse competencies translated to technical-level practice.

Importance of practice

Global standards indicate that nursing education should include a minimum of 50% practice (*31,39*). Immanuel Kant noted, "Experience without theory is blind, but theory without experience is mere intellectual play." (*51*). Kant's sentiment captures the importance of balancing theory and practice in professional nursing education, with both equally valued. Failure to achieve this balance risks producing graduates who do not understand their role or who are not sufficiently competent in providing nursing care. Worldwide, most nursing regulatory authorities provide guidance to education providers or have

regulations setting out minimum requirements for theory and practice. Such guidelines are yet to be developed in Egypt. Logical next steps are defining a scope of practice and tightening regulations governing the balance of theory and practice, by specifying competency requirements and minimum numbers of hours, similar to the European model (*30*).

Local flexibility

The new curriculum is being developed with consideration of the local and national culture and context, including Egypt-specific population health considerations. While the curriculum will be defined nationally, each provider will have up to 20% flexibility to ensure contextualization at regional/local levels. An important consideration relates to suboptimal infection control measures, as demonstrated by high levels of hospital-acquired infections (including iatrogenically induced hepatitis B and C). Reported levels of medication errors and other safety indicators are out of alignment with international standards. For example, content such as the Joint Commission International patient safety goals (*52*) (Figure 3) becomes critical for integration in all modules.

Other considerations include the ethnic and religious backgrounds of the populations served across the 27 directorates in Egypt and associated urban, rural and geographic landscapes. Specific population health and education are key considerations as there are significant differences in population health needs, for example, between the Nubian communities of Upper Egypt and those in the urban centre of Alexandria at the mouth of the Nile. The Egyptian population includes differing religious groupings (e.g., Muslim and Coptic Christian). Consideration of various religious and secular models that reflect the diversity in Egypt may enhance cultural sensitivity and fit.

Foundations of proven educational theory

Basing the curriculum on proven educational theory is important to maximize learning and ensure achievement of desired graduate outcomes (*53*). Well-established educational concepts should be considered in developing CBCs, including those described by theorists such as Bruner, Dewey and Vygotsky (*54*). These concepts describe approaches such as taking learners on a journey from the simple to complex, adoption of a curriculum allowing for continuous learning, reinforcing critical requirements such as adequate practice in the curriculum, and strengthening theory to practice links.

Vygotsky's zone of proximal learning and the process of taking the learner on a journey from the known to unknown or the simple to complex requires that the curriculum is structured in a systematic manner with increasing levels of difficulty. Bruner's spiral curriculum model, by which information is presented and revisited with increasing degrees of challenge and competency

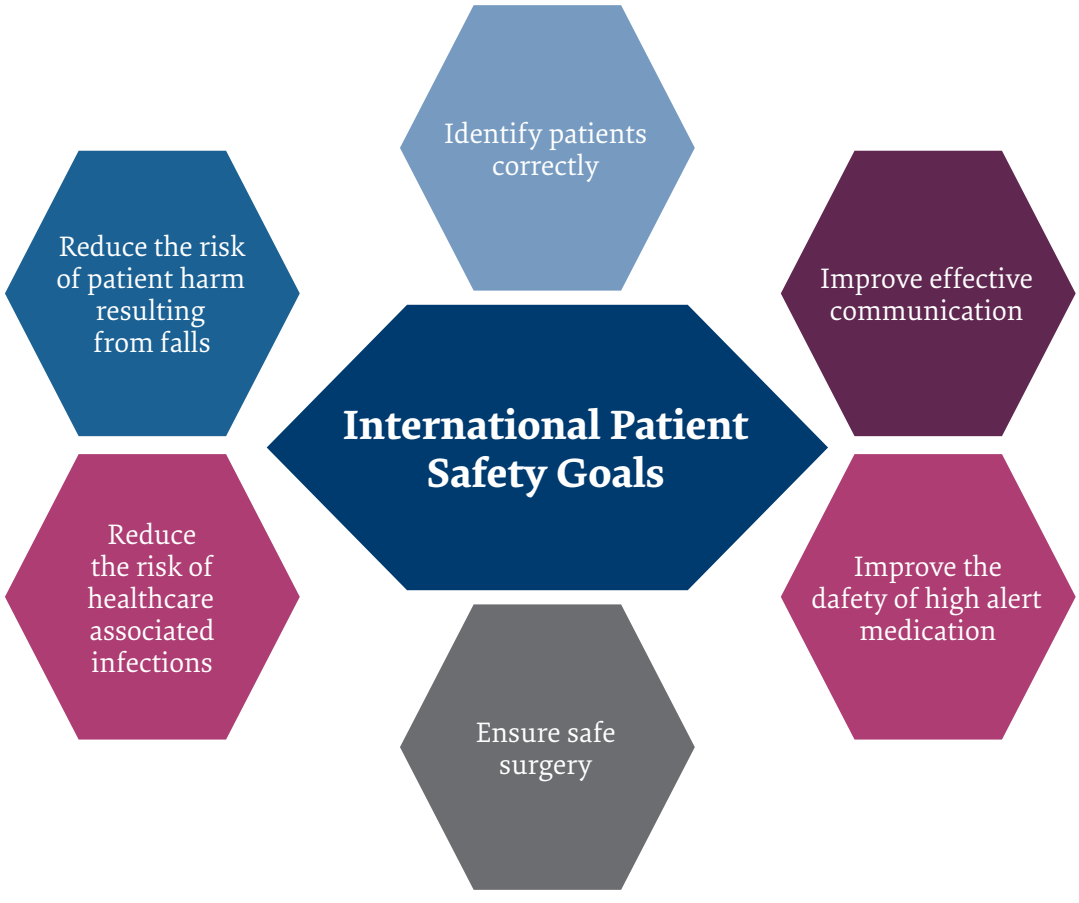
Table 2 Sample of NARS registered nurse competencies translated to technical-level practice

Sample of NARS competencies: registered nurses in Egypt [59]	NARS-aligned draft competencies: technical nurses in Egypt[a]
Domain 1: Professional and ethical practice	
Demonstrate knowledge, understanding, accountability, and responsibility of the legal obligations for ethical nursing practice	Demonstrate understanding of ethical nursing practice that accountably translate to the ethical conduct of patient care with responsibility for actions and omissions
Domain 2: Holistic patient-centred care	
Provide holistic and evidence-based nursing care in different practice settings	Contribute to health education of patients/clients within a supervised nursing framework
Domain 3: Managing people, quality and work environment	
Provide a safe working environment that prevents harm for patients and workers	Contribute to the provision of a safe working environment to prevent harm to patients and workers
Use a variety of sources to review outcomes and compare care with benchmarks to achieve nursing care quality improvement	Provide information and data to contribute to the review of outcomes and assist benchmarking to achieve nursing care quality improvement
Domain 4: Informatics and technology	
Use information and technology to underpin health care delivery, communicate, manage knowledge, and support decision making for patient care	Contribute to the use of information and application of technology to healthcare delivery, knowledge management, and decision support for patients
Use information and communication technology in the delivery of patient/client care	Use information and communication technology in the delivery of patient/client care, in defined areas of practice
Domain 5: Interprofessional communication	
Collaborate with colleagues and members of the healthcare team to facilitate and coordinate care provided for individuals, families and communities	With colleagues and members of the health care team, identify and provide the nursing components of coordinated care for individuals, families and communities

[a] *Drafted by curriculum development workshop participants as a suitability aligned equivalent to the NARS standards for registered nurses.*

NARS = National Academic Reference Standards.

Figure 3 International patient safety goals



requirements, allows for a cycle of continuous learning until the learner has grasped and mastered the full complexity of the concept or skill (*55*). Dewey's concept of learning by doing reinforces the critical requirement for adequate practice within the curriculum, along with sequencing styles to strengthen theory to practice links (*56*).

Contemporary teaching and learning approaches

Successful implementation of a CBC requires different teaching and learning techniques. CBE demands movement away from teaching dominated by lectures, PowerPoint presentations and didactic instruction. Changes in clinical instruction are essential with the requirement to move from time-based didactic strategies to focus on the acquisition of skills and competencies and achievement of clear learning outcomes (*44,57,58*). Therefore, success is dependent on parallel investments in faculty development focused on new pedagogical approaches.

Conclusions

The Egyptian constitutional commitment to every citizen of the right to health is advancing by various strategies, including capacity development of the technical-level nursing education system and associated nursing workforce. Success is dependent on the recognition that such processes require both time and resources, and start with reform of the educational model and curricula by which the nursing workforce is prepared. The project described in this paper represents the pragmatic and realistically incremental approach of the EDF to curriculum design, validation and rollout, designed to increase the likely effectiveness of the challenging process of educational reform. Combined with detailed attention to identified curriculum development considerations, the project is poised to be a major enabler in strengthening the cadre of technical-level nurses in Egypt.

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Competing interests: None declared.

Développement d'un programme d'enseignement national fondé sur les compétences pour les infirmiers techniciens en Égypte

Résumé

La profession infirmière en Égypte a évolué au cours des dernières décennies. Son développement s'est accéléré suite à la reconnaissance récente par le gouvernement de la contribution apportée par les personnels infirmiers à l'accessibilité, la qualité et la prestation des services de santé. Un projet visant à renforcer les capacités des personnels infirmiers a débouché, récemment, sur un nouveau mandat exigeant que tous les programmes d'enseignement en soins infirmiers soient fondés sur les compétences. Dans le même temps, le Fonds de développement pour l'éducation du Cabinet des ministres égyptien a rédigé un plan pour l'enseignement des soins infirmiers comprenant une stratégie dont le but est d'élaborer et de mettre en œuvre un modèle d'éducation contextuellement cohérent, ayant fait ses preuves et d'un niveau comparable aux normes internationales. Le présent article examine le projet d'élaboration de ce programme d'enseignement, d'une durée de quatre ans, destiné à améliorer le programme actuel suivi par les infirmiers techniciens et à le transformer en un modèle cohérent fondé sur les compétences. Ce modèle d'éducation fondé sur les compétences fera l'objet d'un essai au sein de trois instituts techniques avant d'être déployé et mis en œuvre au niveau national. Les détails de la structure du projet sont décrits, avec notamment un aperçu des considérations liées à l'élaboration du programme d'enseignement. Le présent article fournit des idées utiles aux décideurs politiques et aux enseignants qui entreprennent des réformes semblables de leurs personnels de santé ainsi que des initiatives de renforcement des capacités.

وضع منهج تعليمي وطني قائم على الكفاءات للتمريض التقني في مصر

شارون براوني، تشارلز دوكرتي، نبيل اليتيم، محمد جاد الله، راتشل روسيتر

الخلاصة

شهد التمريض في مصر تطورًا ملحوظًا على مدى العقود الأخيرة. فقد تسارع تطوره بعد اعتراف الحكومة مؤخرا بمساهمة الممرضات في وصول الناس إلى الرعاية الصحية العالية الجودة وتقديم الخدمات. وقد أدت صياغة رؤية تستهدف تعزيز قدرات التمريض في الآونة الأخيرة إلى المطالبة بأن تكون جميع المناهج الدراسية للتمريض قائمة على الكفاءات. وفي الوقت نفسه، رسم صندوق تطوير التعليم التابع لمجلس الوزراء المصري خطة لتعليم التمريض تتضمن استراتيجية لوضع وتنفيذ نموذج تعليمي يتلاءم مع السياق المحلي ويحقق نجاحًا يمكن التأكد منه بالمقارنة بالمعايير الدولية. ويناقش هذا التقرير مشروع تطوير المناهج الدراسية الذي يغطي ٤ سنوات والمُصَمَّم لترقية المستوى التقني الحالي للمنهج التعليمي للتمريض والوصول به إلى نموذج متسق وقائم على الكفاءة. وسيتم تجريب النموذج التعليمي القائم على الكفاءات في ٣ معاهد تقنية قبل تعميمه على الصعيد الوطني وقبل تنفيذه. ويتضمن هذا التقرير تفاصيل لخطة المشروع، بما في ذلك لمحة عامة عن الاعتبارات التي ينبغي مراعاتها في تطوير المناهج الدراسية. ويقدم هذا التقرير أفكاراً تبصيرية لصانعي السياسات والعاملين في التعليم ممن يعملون على إصلاح مماثل للقوى العاملة الصحية التي تماثل التمريض، وفي مبادرات تطوير القدرات.

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Capacity building on health diplomacy: a training experience from Pakistan

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Abstract

Modern-day globalization means that many health issues cannot be resolved by the affected country alone, and this necessitates political consultations, diplomatic negotiations and cross-border solutions. A few examples that require health diplomacy efforts are: halting resentment towards immunization, addressing the burden of noncommunicable diseases, enabling access to drugs and technology, and liberalizing trade to reduce the cost of drugs. The agenda of Sustainable Development Goals (SDGs) demands a concerted effort to achieve the ambitious targets. This article reports the experience of health diplomacy training imparted to mid-level and senior officials in the public as well as private sector in Pakistan. Training was geared to inculcate an understanding of global health diplomacy and governance, and to develop an appreciation of the relationship of global health with other disciplines such as foreign affairs, economics, trade, climate change and human rights. Participants included health professionals, experts from departments other than health, government officials and diplomats. This training was expected to enhance their knowledge of health systems dynamics that are influenced by foreign policy and diplomatic discourses.

Keywords: global health, health system, health diplomacy, Sustainable Development Goals, World Health Organization.

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Introduction

According to the Preamble to the Constitution of the World Health Organization, "Health is a complete state of physical, mental and social wellbeing, and not merely the absence of disease or infirmity" (*1*). To achieve this goal, health has to be looked at from a variety of perspectives among the multitude of factors that influence health. The high burden of preventable diseases in poor countries calls for strategic planning and investment across health and health-related sectors to improve the lives of poor people in particular, and to promote socioeconomic development in general (*2*). Inadequate allocations and other system constraints impede the efforts at global and national levels. There is a growing realization in the current globalized world that health issues cannot be resolved by the health sector alone. Some health problems need political negotiations and solutions, for example, stopping hostility towards immunization, involving the non-health sector in addressing noncommunicable diseases and access to drugs and technology. The broad political, social and economic implications of health issues have brought more diplomats into the health arena and more public health experts into the world of diplomacy, thus giving birth to the notion of health diplomacy (*3*). Hence, health professionals, advocates, managers, policy-makers and researchers must deliberate about health, considering all other factors and elements that account for and contribute towards this notion (*4*). Diplomats and governmental officials, while engaging in high-level diplomatic dialogues, must position health at the centre within their discourses on foreign policies, trade and economic policies, macroeconomic frameworks, poverty reduction strategies, global environmental changes, and exchange of technology (*5*). Health system goals necessitate broader efforts today, and cannot await mere advancement in the field of medicine alone. It has become important to negotiate health beyond the health sector at local (between departments), regional (between neighbouring countries/cross border) and, more importantly, global levels. When countries face human-made and natural crises, the right to health and social justice is compromised. Health diplomacy in such situations opens avenues for humanitarian assistance across borders. For instance, International Health Regulations (IHR) endeavour to make the world a safer place by mustering national commitments to prevent spread of diseases across borders (*6*).

Present-day public health professionals are expected to carry a worldly and humanitarian vision, concerned with the global public good, and to be seasoned natural diplomats possessing cultural awareness, sophisticated demeanour, and essential diplomacy skills (*7*). The World Health Organization (WHO), realizing this need, organized its first training course in 2012 on health diplomacy for the executives of health ministries and foreign offices, and this has continued on an annual basis. Following the success of a series of such training workshops at the WHO Regional Office for the Eastern Mediterranean, the WHO Pakistan Office, Health Services Academy, and the Ministry of National Health Services, Regulation & Coordination decided to follow suit and organized a similar but more contextualized training course in Pakistan. This training aimed to build health

diplomacy capacity of senior managers from federal and provincial health departments, departments of finance, and departments of planning and development; Pakistani Foreign Office; development agencies and donors; as well as professionals from academia and research organizations.

Training objectives

Based on experience of similar training in the WHO Regional Office for the Eastern Mediterranean, and from a review of the literature on the subject, the following training objectives were outlined: 1) understand the field of global health diplomacy, its history, recent development and key challenges; 2) learn to define key concepts of global health, global health diplomacy and global health governance, and customize them into the local context; 3) appreciate the key cross-cutting issues of global health in relation to foreign policy, trade, climate change, human rights and other related disciplines; and (4) analyse case studies, for example, polio, and comprehend the negotiation processes at the national, regional and global levels.

Training curriculum

To develop the training course content, the proceedings of the WHO health diplomacy seminars (2012–2016) (*8*) were used, along with some useful content from a book on global health diplomacy (*9*). Moreover, an extensive literature search was carried out on Google Scholar and PubMed with the key words: Global Health, Health Systems, Health Diplomacy, and International Health. Peer-reviewed published articles were downloaded to be used as session readings. Documents and papers on themes such as negotiation processes for health in foreign policy, security policy and trade agreements; global health agenda and priorities; global perspectives on human rights and health; and macroeconomics and health diplomacy were also included. Specific documents on SDGs were introduced to explain SDG3 and its cross-sectoral dynamics.

Adaptation of the training course

During adaptation of the training course, some content was added on governance and reforms of the health system being undertaken in Pakistan; efforts on compliance with IHR; polio as a case study for health diplomacy; and then we added a panel discussion with development partners on health diplomacy in the local context, which turned out to be a significant feature of the course.

Training pedagogy

Training sessions were interactive and participatory, based on a mixed pedagogy of lectures, panel discussions, case studies, group work, and participation in a half-day conference on SDGs, highlighting Government of Pakistan initiatives and undertaking to work towards SDG3 in particular, which pertains to health and well-being. The speakers comprised eminent national and international experts, coming from diverse backgrounds and had been involved in health diplomacy at national, regional and international forums.

Content of the training

Introduction to health diplomacy: key concepts and definitions

Health has become a diplomatically relevant subject in a globalized world. Diplomacy means to discuss the possible common interests among politically or socially organized groups, and not merely between states. Global health agenda, global health initiatives, global health partnerships, global health laws, global health observation, and health as global public good reflect the globalization of the notion of health. The prominence of health in foreign policy has influenced the Millennium Development Goals (MDGs) and now SDGs agendas (*10*). Global health diplomacy encompasses a wide range of issues such as trade-related intellectual property rights; global health security; pharmaceuticals; medical tourism and trade; global health financing; norms, regulations and standards; and ethics and human rights (*11*). The SDG themes need even more robust health diplomacy than before because Pakistan missed the MDG targets in 2015, and the complex nature of the SDGs needs a multisectoral approach (*12*). States, multilateral organizations [United Nations (UN), WHO, World Trade Organization (WTO) and World Bank], bilateral agencies, non-state actors, international nongovernmental organizations (INGOs), NGOs, academia, professional organizations, think tanks, foundations, partnerships [Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), and Global Alliance for Vaccines and Immunization (GAVI)] ought to interact closely to find pragmatic solutions to cross-border health problems. All these stakeholders have a role to play. Therefore, this state of affairs explains the health and foreign policy interconnection, compatibility and interest (*13*). Health diplomacy can be effective in preserving national interests while pushing the global health agenda.

Global perspectives on human rights and health

Health is a universal human right: imprescriptible, indivisible and non-negotiable. Human dignity, societal development, economic interests and national security are some of the common grounds of health and foreign policy (*14*). The bases of global health diplomacy are multidimensional: legal, value based and evidence based. The legal dimension is derived from global health laws and treaties; the value-based dimension focuses on notions of equality, freedom, solidarity and shared responsibility; whereas the evidence-based dimension relates to statistics, estimates, modelling, case studies and best practices. The human rights dimension is another facet of health diplomacy reflected in WHO's work in emergencies and crises where aid is delivered without discrimination and boundaries. This is what was written in the UN Charter for Human Rights, which advocates altruism, equilibrium, reconciliation and justice. Health diplomats have a responsibility to represent the interests of the global community as well as their own country (*15*).

Intersection of WTO agreements and public health

With the emergence of global trade regimes [General Agreement on Tariffs and Trade, General Agreement on Trade in Services, Trade-Related Aspects of Intellectual Property Rights (TRIPS), Sanitary and Phytosanitary Measures (SPS) and WTO], there is more need for better health diplomacy. The agreements cover tariffs, services, intellectual property, trade rules and trade disputes etc. While global trade has yielded economic openings with cross-border flows of goods and services, it has also had repercussions on national and household economies, and has carried risk factors affecting health services and eventually the health of individuals. WTO is a non-discriminatory organization that allows exemptions as well as restrictions for the protection of health. The agreements cover issues like prices of and access to drugs; fake and forfeited drugs; import of tobacco, unsafe food and dairy products; health tourism; and cross-border transmission of diseases (*16*). Health diplomacy requires correct information and understanding of all such agreements and their policy coherence, hence establishing health as a common denominator. Therefore, ministries of foreign affairs, finance, trade, commerce and health ought to be in agreement for negotiations.

Global health agenda and priorities

The present-day global health agenda demands priority setting, and this has become another central point of health diplomacy. The global agenda relates to national as well as transnational health issues, and needs a new context and deeper understanding of interdependence of nations, international organizations and other actors. Its goal is simple: equitable access to health in all regions of the world. The 12th general programme of WHO focused on the global health agenda and articulated WHO's priorities in the changing global environment, with their implications on health (*17*). Some of the salient features of the global health agenda include universal health care, social and economic determinants of health, noncommunicable diseases, health-related MDGs and now SDG3, increased access to essential drugs, and IHR 2005. There has also been advocacy for better cultural and collaborative linkages between Muslim countries through health diplomacy (*18*).

Health governance and reforms

Regulation, rule of law, control of corruption, voice and accountability, absence of violence, governmental effectiveness, and fair financing are equally applicable in the health sector. In case of unsatisfactory governance, the required reforms are to be undertaken in order to make the system perform adequately. Therefore, the role of other stakeholders outside the state system becomes indispensable. Health systems, when well governed, deliver better health outcomes, equity and responsiveness, the ultimate goals advocated by the WHO. Health diplomats need to be cognizant of the fact that good governance warrants social protection, efficacy and quality of services, efficient allocation of resources, health systems research and capacity building (*19*).

IHR and global health security

A more recent subject covered under global health diplomacy is IHR and the global health security agenda. IHR were passed in 2005, and they call for building core competencies at a national level for implementation to ensure global health security (*6*). There have been numerous challenges identified and addressed and a way forward has been suggested. It became important to ratify IHR because of the emergence and re-emergence of infectious diseases, and their pace of spread due to global travel. Moreover, the threat of use of biological and chemical agents needed some serious regulations to be passed to avoid undesirable events. Cross-border transmission of infections has economic, security and health concerns. Here, global health diplomacy comes into play to advocate containment of international spread of disease and maintenance of national sovereignty (*20*). HIV/AIDS, yellow fever, polio, Ebola virus disease, anthrax, avian influenza and now Zika virus disease are some of the examples taken up by the IHR agenda in recent times to ensure maximum public health security. This has been possible only because of a coordinated response in some countries, global partnerships and concerted monitoring of such threats. A health threat anywhere is a health threat everywhere (*21*). Global health diplomacy has led to a global health security agenda that presents a unified framework to improve the global response to disease outbreaks.

Polio: a case study for health diplomacy

Polio is the best example to explain the intersection of diplomacy and health. Core diplomacy has been seen between the agencies supporting the polio eradication initiative, such as United States Agency for International Development, Kreditanstalt Fuer Wiederaufbau, US Centers for Disease Control and Prevention, and Japan International Cooperation Agency. The diplomacy did not intend any binding or agreement per se. However, the nature of this interaction has changed over the last few decades, with addition of other international public health actors, NGOs, private sector and the states most affected by the virus. Scientific evidence coupled with support from the clergy, pressure from civil society, and political will, decreased endemicity of polio from 125 countries in 1988 to three in 2016. In Pakistan, effective coordination in the programme operations, communication and security, use of valid and transparent data led to a dramatic turnaround in the polio situation. Moreover, despite the strict and conservative local cultural milieu, local diplomacy efforts were instrumental too, which included community elders' engagement and Islamic scholars' involvement in advocating polio vaccination. The outcome of this diplomacy is evident today, whereby Pakistan has remarkably reduced the number of polio cases from 20 in 2016 to only five cases in 2017.

Diplomacy for population matters

Rapid population growth is another area in which Pakistan needs technical, financial and logistic support from the international community. The population has increased by 6-fold since independence in 1947, which has been a point of serious concern for demographers, health systems experts, policy-makers and development agencies. Twelve out of 17 SDGs are related to population, so much of the emphasis is given to population matters in the global health discourse. Diplomacy at the national level requires lobbying with local clergy, health professionals, development specialists, economists and the private sector. Similarly, south–south collaboration with neighbouring countries and with Islamic countries could foster positive results because they can work together to find solutions to common challenges, as they are linked by similarities in their developmental contexts as well as population issues.

Health diplomacy and multilateralism

It is important to be able to protect, promote and articulate national interests amidst a situation in which several countries or organizations work together to achieve solutions to a common problem. Multilateralism could result in diffusion of state sovereignty or it may enhance the state's responsibility. It aims to orchestrate and coordinate the efforts of governments and non-state actors to improve global health, keeping in mind the local needs, capacity, resources and potential to scale up (*22*). The role of WHO is vital in this context; providing leadership on matters critical to health and hence shaping the future agenda. Moreover, WHO can assert the norms and standards, monitor ethical implementation, provide technical capacity, and assess the health trends. Examples of multilateral health diplomacy forums are United Nations Children's Emergency Fund, United Nations Development Program, United Nations Fund for Population, GAVI, United Nations Program on HIV/AIDS, GFATM, WTO, SPS and TRIPS. Non-state entities and actors have recast the definition of global health (*23*). Therefore, governments and non-state actors are together making an attempt to coordinate and orchestrate global policy solutions to improve global health (*24*). Health diplomacy is carried out in two stages: 1) international stage for resource allocation of multilateral institutions; and 2) resource allocation and priority setting during bilateral negotiations. This latter stage helps with development of a firm, goal-oriented and well-thought-through country strategy for health. Nevertheless, in seeking foreign aid or assistance, governments ought to abide by the Paris/Accra declarations, which revolve around the notions of ownership by the government system, alignment with national priorities, harmonization with other sectors, and mutual accountability in timely fashion and by third parties (*25*).

Macroeconomics and health diplomacy

Macroeconomics deals with the performance, structure, behaviour and decision making of an economy as a whole, rather than of individual markets. Inflation, national income, gross domestic product and unemployment rates have implications for the health system, healthcare seeking, health behaviour and ultimately, health outcomes. As a solution, ministries of finance, planning, foreign affairs, trade and commerce, along with health, ought to act in tandem with development agencies, civil society, philanthropic organizations, academia, research institutions and the private sector. Global health diplomacy in macroeconomics must focus on increasing investment in health and progressively eliminating the financial bottlenecks in access to health care. Key questions however are: how to make health central in a country's macroeconomic framework and increase domestic allocation of resources to health; and how to make foreign aid more predictable and aligned with national priorities. Currently, health needs to be represented as part of all macroeconomic discourses, negotiations and consultations. New public health realities and challenges require robust macroeconomic cooperation to look at the threats of bioterrorism, cross-border transmission of diseases, and linkage with human rights, trade, intellectual property and health. Health can assume a lead role in multisectoral macroeconomic dialogues, and can also be used as track 2 diplomacy between rival countries. WHO Commission on Macroeconomics and Health positioned health as a central determinant of economic development, pleading for increasing investments in health by the states and donors, especially in Organisation for Economic Cooperation and Development countries (*26*).

WHO as a key venue for global health diplomacy

The global health landscape is crowded with issues that need to be addressed, and WHO has an important role to play in directing and coordinating international health work. In matters pertaining to humanitarian emergencies (Ebola crisis), global coordination (IHR and noncommunicable diseases) and partnerships (One UN, Paris Declaration), the role of WHO in global governance remains undeniable and undisputable. Unfortunately, the context of governance has changed from a shared global space of responsibility to one of threat (*27*). Therefore, complexity of governance has to be understood where health is not only a precondition and an outcome, but also an indicator of a sustainable society, and should be adopted as a universal value and a shared social goal and political objective. Health must be moved up the political agenda in development polices and in global agreements because of its relevance to the economy, political ideology, legitimacy and security expectations of citizens.

Discussion

This short training in health diplomacy has helped to: 1) foster partnerships among public health agencies; 2) represent health in foreign affairs and other political and economic forums; 3) advocate health causes and monitor progress towards health targets; and 4) engage senior diplomats in global health affairs. Health diplomacy requires

concrete steps towards ensuring long-term gains at global, regional and national levels (*28*,*29*). In the present day, it has become essential to train health and non-health actors in global health issues in order to achieve sustainable results in the health sector (*30*). It is expected that as a result of this training in health diplomacy, health professionals, experts from departments other than health, and diplomats now have enhanced knowledge of the field and understand the significance of repositioning health in international diplomatic discourses. This training has enhanced their knowledge of foreign policy and diplomatic involvement in health issues, and has given them a better understanding of the common health issues at regional and global levels, and their implications for health systems. Other countries, especially in the WHO Eastern Mediterranean Region, can replicate this training course with some adaptation for the context of the local health system.

One limitation of this training, however, was that because of the senior level of participation, it was not deemed suitable to conduct a pre/post-assessment of the training to gauge the change in knowledge of the participants about the subjects covered.

Conclusion

Health diplomacy brings stakeholders from economic, social and political sectors together, and engages all partners to find solutions jointly for the complex health problems in the modern world. Furthermore, it can mobilize parliamentarians to advocate for health in national policy forums, which might lead to legislation, increased financial allocations, reforms, and partnerships. Investment in health diplomacy training thus has large benefits for economic development, social justice and national security.

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Renforcement des capacités en matière de « diplomatie sanitaire » : l'expérience d'une formation au Pakistan

Résumé

À l'heure de la mondialisation, de nombreux problèmes de santé ne peuvent être résolus par le pays concerné à lui seul et exigent la tenue de consultations politiques et de négociations diplomatiques ainsi que la recherche de solutions transfrontalières. Des efforts de diplomatie sont notamment nécessaires pour apaiser les ressentiments concernant la vaccination, répondre à la charge que représentent les maladies non transmissibles, ouvrir l'accès aux médicaments et aux technologies et libéraliser les échanges commerciaux afin de faire baisser les prix des médicaments. Le programme des Objectifs de développement durable exige un effort concerté afin d'atteindre ces cibles ambitieuses. Le présent article fait état de l'expérience d'une formation en diplomatie sanitaire destinée à des hauts responsables et des cadres de niveau intermédiaire issus des secteurs public et privé au Pakistan. La formation était conçue pour développer une compréhension de la diplomatie et de la gouvernance sanitaires mondiales ainsi qu'une appréciation de la relation entre la santé mondiale et d'autres disciplines comme les affaires étrangères, l'économie, le commerce, le changement climatique et les droits de l'homme. Les participants incluaient des professionnels de la santé, des experts issus d'autres secteurs que celui de la santé, des responsables officiels et des diplomates. Cette formation devrait permettre aux participants d'améliorer leur connaissance des dynamiques des systèmes de santé qui sont influencées par les politiques étrangères et les discours diplomatiques.

بناء القدرات في مجال «الدبلوماسية الصحية»: خبرات التدريب في باكستان

بابر تسنيم شيخ، صائم حميد، أسد حفيظ

الخلاصة

في عالم اليوم الذي تغلب عليه سمات العولمة، يصعب على البلد المتضرر من مشكلة صحية ما معالجة العديد من جوانب تلك المشكلة بمفرده، بل يحتاج إلى إجراء مشاورات سياسية ومفاوضات دبلوماسية وإلى حلول على طرفي الحدود بينه وبين البلدان المجاورة له. ومن الأمثلة القليلة على ضرورة بذل الجهود الدبلوماسية لحل المشكلات الصحية الامتناع عن التمنيع باللقاحات، والتصدي لعبء الأمراض غير السارية، والتمكين من الحصول على الأدوية وعلى التطورات التكنولوجية، وتحرير التجارة لتخفيض أسعار الأدوية. ويطالب جدول أعمال أهداف التنمية المستدامة ببذل جهود متناسقة من أجل تحقيق أهدافه الطموحة. ولهذا السبب فإن الدبلوماسية الصحية تعتبر جزءًا لا يتجزأ من السياسة الخارجية، فلها فوائدها في التنمية الاقتصادية وفي العدالة الاجتماعية وفي الأمن القومي. وتدعو منظمة الصحة العالمية إلى بناء القدرات في النظم الصحية، وفي الدبلوماسية الصحية

وإضفاء الطابع المؤسسي عليها على الصعيد الوطني لتطوير القادة الملتزمين من كلٍّ من القطاع الصحي والقطاعات غير الصحية. وتعرض هذه المقالة الخبرات المكتسبة في تدريب أصحاب المستوى المتوسط من كبار الموظفين العاملين في القطاعين الخاص والعام في باكستان على الدبلوماسية الصحية.

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Task sharing in health workforce: An overview of community health worker programmes in Afghanistan, Egypt and Pakistan

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Abstract

Background: Community health workers (CHWs) help reduce healthcare disparities and improve access to and quality of care in many countries.

Aim: To provide an overview to compare and contrast characteristics of CHW programmes in Egypt, Pakistan and Afghanistan and describe the strengths, weaknesses and challenges of the programmes.

Methods: Scientific databases and grey literature were searched including PubMed, Medline, Cochrane Review Library, WHO databases, and grey literature websites including those of national health ministries. We shortlisted 23 articles to be included in this study.

Results: The three programmes reviewed vary in their organization, structure, enrolment and payment structure for CHWs. Key challenges identified in the review include: commodity security that compromises quality of services; inadequate and irregular training; unpredictable or inadequate remuneration structure; and lack of standardization among organizations and government ministries. Strengths identified are that the programmes are accepted and integrated into many communities; and have the support of health ministries, which enhances sustainability and regulates standardized training and supervision. These also increase participation and empowerment of women, evident in the fact that CHWs have organized among themselves to demand better treatment and more respect for the work that they do.

Conclusion: Our findings should alert policy-makers to the need to review CHWs' scope of practice, update education curricula, and prioritize in-service training modules and improved working conditions. The effectiveness and impact of CHW programmes has been shown countless times, demonstrating that task sharing in healthcare is a successful strategy with which to approach global health goals.

Keywords: community health worker, female health worker, raedat, task sharing, Eastern Mediterranean Region

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Introduction

In the past several years, community health worker (CHW) programmes have been consistently effective in improving the health of the populations they served. This has led to the understanding that task-sharing in healthcare is a successful strategy with which to approach global health goals (*1,2*). CHWs serve as liaisons between small communities and larger health systems by providing community-based primary health care, especially for rural populations. According to the World Health Organization (WHO), "community health workers should be members of the communities where they work, should be selected by the communities, should be answerable to the communities for their activities, should be supported by the health system but not necessarily a part of its organization, and have shorter training than professional workers" (*3*). Although there is much variation in the characteristics and duties of CHWs globally, they have proven to be a crucial bridge to reduce unmet healthcare needs in rural populations, and are often advocates for community engagement and education in health (*1*).

Providing health care within communities is important, and perhaps nowhere more so than in the WHO Eastern Mediterranean Region. CHW programmes are especially important in the Region because there are high illiteracy rates, poor infrastructure in some areas, and especially tight-knit communities that in some cases may lack trust for higher networks such as governments and nongovernmental organizations (NGOs). Improving, scaling up or developing CHW programmes in the Region could have a significant impact on maternal and child health outcomes, as well as improve mental health and reduce infectious disease burden (*1–6*). Several countries within the Region have had significant success with CHW initiatives.

The objectives of the study were to give an overview of the characteristics of three specific CHW programmes in Egypt, Pakistan and Afghanistan, and to review their strengths, weaknesses and challenges.

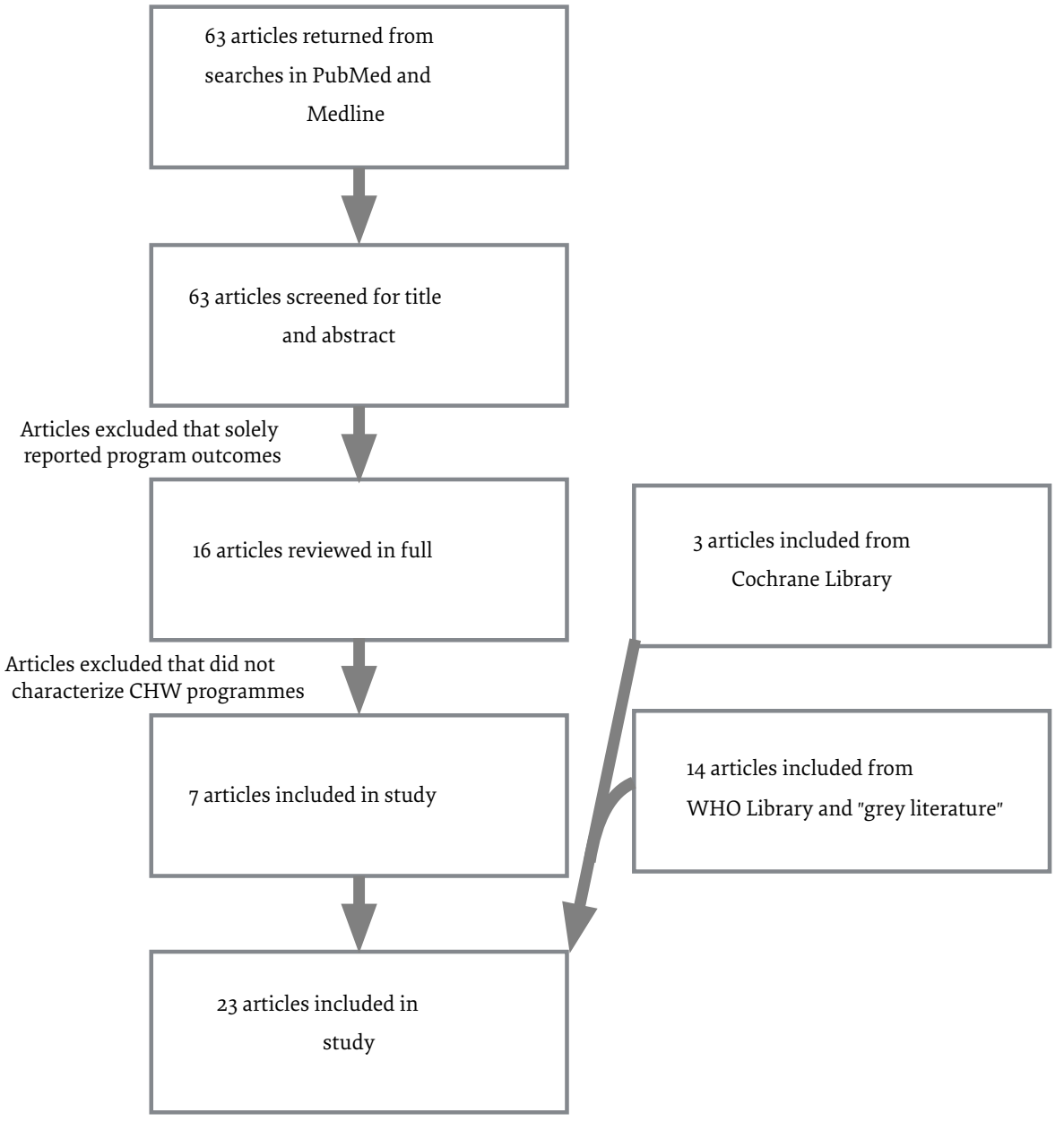
Methods

A literature search was conducted in PubMed, Medline and Cochrane Review Library. Grey literature including governmental programme evaluations and WHO documents were also searched. The search was conducted

from 1 June to 30 September 2017. We identified papers about CHW programmes in all the countries of the WHO Eastern Mediterranean Region. Search terms used in PubMed were "community health worker", "lady health worker", "raeda", "behvarz", the MeSH term "community health workers", and the names of all the countries in the Region. In addition to a search in PubMed, an individual search for CHW programmes in each country was conducted in Google. Based on the findings from these searches, we chose to compare Egypt, Pakistan and Afghanistan in this paper because they represented three different types of CHW programmes and had > 3 literature sources identified in our review.

We reviewed the abstract of 63 papers in PubMed; 16 of which were reviewed in full text and seven of which were included in the study. Inclusion criteria for sources were that studies reported quantitative demographic information about CHWs and gave descriptive information about how the CHW programme functions on a national level. Papers that focused on CHW programmes in any other than the three selected countries were excluded. Papers that reported the effectiveness of CHW programmes without discussing programme characteristics were excluded, as the goal of this search was to gather information about the workings of the CHW programmes. Three reviews were included from the Cochrane Library and 14 sources came from grey literature, including WHO published documents and documents from national governments. See Figure 1 for an overview of the papers included. We reviewed the selected literature and also reported any relevant qualitative information. We compared the following characteristics of CHW programmes from Egypt, Pakistan and Afghanistan: programme organization

Figure 1 PRISMA flow chart of the included studies



and scope, and CHW requirements, demographics, duties, populations served, training, supervision and remuneration. Challenges identified in the reviewed literature were reported and compared.

Results

CHW programmes in WHO Eastern Mediterranean Region

A basic Google search indicated that 14 of the 23 countries/regions within the WHO Eastern Mediterranean Region had some form of CHW programme. Details about the majority of these programmes were difficult to find, but we considered that the following countries have had some form of CHW programme: Afghanistan, Islamic Republic of Iran, Jordan, Kuwait, Oman, Pakistan, Syrian Arab Republic, Yemen, Palestine, Egypt, Morocco, Tunisia and Sudan. The literature search within PubMed yielded at least 1 scientific study involving CHWs in Afghanistan, Islamic Republic of Iran, Iraq, Pakistan, Egypt, Tunisia and Sudan, although these countries did not necessarily have programmes in place.

Comparison of CHW programmes in Egypt, Pakistan and Afghanistan

The characteristics of the three CHW programmes are listed in Table 1. The oldest programme is in Egypt where CHWs are called raedats. This programme was started in 1964 by the Ministry of Social Affairs, initially to promote family planning and population development (7). The programme has greatly changed over the years and is now run by various government ministries and NGOs, which have different goals and structures (8). The next programme reviewed is in Pakistan, where CHWs are called lady health workers (LHWs). This programme was started by the Pakistani government in 1994 and has continued to be operated and regulated by the government (9). This programme has historically been the most cohesive and standardized of the three reviewed; likely because it is run by a single organizing body with a standardized mission statement and job description for all LWHs. The last reviewed is the CHW programme in Afghanistan, which was founded in 2003 as a postwar redevelopment effort (10). This programme is run by 29 international NGOs with some governmental involvement, and being the youngest of the programmes, it has been possible to model its structure and organization on other global CHW programmes (11).

Selection and demographics of CHWs

In all programmes, CHWs must be members of the community that they serve. The importance of this is highlighted by interviews with community members who said that they were more likely to trust CHWs from the same sociocultural background as themselves (7). In Pakistan and Afghanistan, CHWs must have formal approval by the community before starting their job. In Egypt in 1995, 87% of raedats lived in the same community that

Table 1 Characteristics of CHW programmes and participants

CHW title	Raedat Rifiat (or CHW) Egypt	Lady health workers Pakistan	CHWs Afghanistan
Year founded	1964	1994	2003
Programme run by	Various government ministries and NGOs	Government	29 NGOs and some governmental involvement (11)
Programme goals	Initially family planning and population development. Now community education and promoting women's participation in community (7)	Provide primary health and to decrease unsent need for healthcare in rural and urban slum areas (9)	Part of postwar redevelopment effort. Founded to provide basic healthcare services with equitable access, especially in underserved areas (10)
Recruitment	Volunteers interviewed. Community leaders may motivate candidates to volunteer (8)	Posts advertise openings and applicants interviewed by a committee (13)	Volunteer basis and chosen by consultation between community elders and NGO staff (14)
CHW requirements (not always enforced)	Resident of community. Higher than community average education level. < 3 children. Husband's consent if married (8)	Resident of community. ≥ 8 years of education. 18–50 years old. Community approval (13)	Resident of community. ≥ 18 years old. Community approval. For women, permission by head of household (14)
Sex	Female	Female	Female (36%) and male (64%) (11)
Average age (yr)	29.9 (8)	32.4 (13)	35 (11, 15)
Married	77% (8, 12)	66% (13)	87% (11)
Education level	59% have intermediate education or above (8)	9.94 years on average (14)	7 years on average, 20% illiterate (11)
% who ever used family planning methods personally	70% (7)	71% (13)	No data

CHW = community health worker; NGO = nongovernmental organization.

Table 2 Roles of CHWs and populations served

	Egypt	Pakistan	Afghanistan
CHWs' main responsibilities	FP education and promotion (7) Write referrals (12) Promote vaccination (8) Postnatal care (8) Health education (8) Community development projects (12) Collecting demographic data for catchment area (8) Record keeping (8)	FP promotion (16) FP provision Write referrals (16) Ante/postnatal care (16, 17) Pregnancy recording (16) Breastfeeding promotion (16, 17) Growth monitoring (16) Diarrhoea treatment (16) Malaria treatment (16) Acute respiratory infection treatment (16) Intestinal worms treatment (13) DOT for TB (16) Polio surveillance (18) Promote vaccination (16, 18) Promote nutrition (16) Promote hygiene (16) Health education (13, 16) Record keeping (16) Emergency relief (16)	FP promotion (10) FP provision (11, 15) Write referrals (10) Ante/postnatal care (10) Breastfeeding promotion (10) Administer vitamins (10) Diarrhoea treatment (10) Malaria treatment (10) Acute respiratory infection treatment (10) DOT for TB (10) Promote vaccination (10) Promote nutrition (10) Hygiene education (11, 15) Mental health and substance abuse education (10) Health education (10) Record keeping (10) Community development projects (10) Community mapping (10)
Mean no. households in catchment	400–600 (8)	131 (12) Target = 200	78% serve < 150 (11) Target =100–150
Mean no. individuals in catchment	7665–11 562 (7)	919 (12) Target = 1000	No data
Village households visited by CHW	60% (8)	85% in last 3 mo (14)	No data
Households visited per week	Target = 30 (8)	27 (14)	Generally 10–50 (11)
Estimated no. CHWs	14 000 (2004) (8)	90 000 (2008) (14)	19 000 (2014) (13)

CHW = community health worker; DOT = directly observed treatment; FP = family planning; TB = tuberculosis.

they served (7), while in Pakistan in 2008, 97% were found to reside in the community where they worked (12). In Egypt and Pakistan, CHWs must be female. In Afghanistan, CHWs are both male and female, and each health post in the country aims to have 1 CHW of each sex, ideally related to each other. In order for women to be CHWs in both Egypt and Afghanistan, they need permission from their husband or the male head of their household (7,8).

Selection of CHWs varies between the countries, but in all three countries, CHWs are interviewed before they are hired. In Egypt and Pakistan there is an educational requirement for CHWs. Egypt relies on community members, ideally young married women with not too many children, to volunteer for the job of raedat (6,7,11). Community leaders are often relied upon to recruit promising candidates. Candidates must have a higher than average education level, and some organizations require literacy (8). In Pakistan, women aged 18–50 years, preferably married with children, are recruited by job postings in communities. After interviews, they are hired by a committee, which includes medical officers and at least one community member (12). LHWs must have ≥ 8 years of education; a rule that is strictly enforced, with only 1% of LHWs not meeting this criterion (12). In Afghanistan, men and women aged > 18 years, ideally well educated, although there is no strict requirement, are hired through a consultation process between NGO staff and community elders (13). After they are hired, CHWs are expected to turn a room of their house into a health post, and the village must approve the appointment (14). Additional demographics and selection criteria are compared in Table 1.

Services delivered and populations served

The responsibilities of CHWs in the three programmes vary slightly and are listed in Table 2. CHWs in all three-programmes are responsible for providing information about family planning (FP), writing referrals to other health workers, providing either ante- or postnatal health care, promoting vaccination, and providing disease prevention and other general healthcare information. CHWs in Pakistan and Afghanistan are additionally certified to provide treatment for some common diseases such as diarrhoea, malaria, respiratory illnesses and intestinal worms, and directly observed therapy for tuberculosis. CHWs in Afghanistan additionally provide education for mental health and substance abuse. LHWs in Pakistan are trained to provide emergency relief. Other com-

Table 3 CHW training, supervision and remuneration

	Egypt	Pakistan	Afghanistan
Training duration	Varies by government or NGO employing raedat. 2 d to 6 wk (8) Government employed raedats train for 5 d in a course focused on family planning, record keeping and communication skills (7, 8)	Government standardized. 3 mo full-time pre-service, 1 yr in-service given by physicians and other healthcare personnel. Most undergo additional elective skills based training (20)	Government standardized and conducted by NGOs. Three 3-wk training modules of increasing difficulty each separated by 1 mo of field work. Modules: 1. disease treatment, 2. maternal child health, 3. disease prevention (14, 15)
Percentage CHW receiving pre-service training	28–92% depending on the organization (7)	100% (20)	76% (15)
Retraining	Not standardized, may be included in supervision meetings (8)	Monthly retraining at health facilities and additional skills training courses available (13)	3-d course every 6 mo, may be included in supervision meetings (15)
Supervision meetings	Not standardized, monthly or bimonthly. ~30% are visited in the field (8)	Monthly meeting at health facility with supervisor, and monthly evaluation meeting in the field (13, 14)	Monthly meeting with supervisor in the field (15)
Percentage CHWs supervised	No data	97.7% (14)	97.8% (11)
Bases for evaluation of CHWs	Skills based, quality of record keeping, number of home visits, or new family planning acceptors (7, 8)	Client perceptions and a review of previous month's work (13)	No. of home visits, referrals to health facility, utilization of drugs and supplies, registry of mother and neonatal morbidity and mortality (15)
Yearly salary	US$240–396 (2004) (8)	US$918 (2015) (19)	None (10)

CHW = community health worker.

mon non-healthcare responsibilities of CHWs are mapping their communities, and population record keeping (*7,8,13,15,16*). Promoting community engagement of women is also an important feature of these CHW programmes. Afghanistan employs male CHWs who carry out many of these responsibilities not strictly related to FP.

Pakistan has the most robust programme with an estimated 90 000 LHWs in 2008 (*12*). The number of community members served by each individual CHW varies between organizations, and most organizations outline targets for their CHWs. There is greatest variation in Egypt, with each CHW responsible for 400–600 homes (7). The other defined targets are 200 households per CHW in Pakistan and 100–150 households in Afghanistan. These targets are generally met in both countries, as shown in Table 2 (*11,14*).

CHW training, supervision and payment

Details about differences in training, supervision and payment are reported in Table 3. In Pakistan, LHW training is the most standardized, regulated and enforced compared to the programmes in Egypt and Afghanistan, with 100% of LHWs completing 3 months pre-service training plus 1 year of training in the field (*12*). In Afghanistan, training is also standardized; however, replacement CHWs who take over posts of former CHWs often do not undergo formal training. For this reason, only about 76% of CHWs reported having attended the three 3-week training modules (*13*). The innovative training schedule in Afghanistan includes classwork and in-service training, and has standardized pictographic training manuals that can be used regardless of literacy. In Egypt, training requirements vary by organization, and depending on which government body or NGO employs the raedat, 28–92% reported receiving training (7). The Ministry of Health and Population raedat programme, which employs the largest number of raedats, has a 5-day training course. However, as the course is offered only rarely, many raedats report working for 3–5 months before undergoing training (*7,8*). Formal supervision and retraining requirements are standardized and enforced in Pakistan and Afghanistan, with ~98% of CHWs reporting supervision in both countries. CHWs in both of these countries are formally assigned to health facilities that employ CHW supervisors. Supervision and retraining in Egypt vary between organizations that employ raedats (*7,8,11*). In all three countries, supervision and evaluation is conducted in the field. Evaluations vary between programmes and may be based on number of home visits made, quality of record keeping, and community member satisfaction with the CHWs (*11,14*).

CHWs in Egypt and Pakistan are paid, while those in Afghanistan work on a voluntary basis, but may be compensated with nonmonetary commodities such as food, transportation, bicycles, household items, or stipends based on referrals to health facilities for FP and tuberculosis treatment (*11,14*). LHWs in Pakistan have a standardized salary set by the government (8000 rupees/month in 2012), although many of them wait several months between receiving payments, and report intermittently not receiving their salary in full. Remuneration is not standardized in Egypt, and depending on the organization, payment may only cover

Table 4 **Challenges and recommendations**

	Egypt	Pakistan	Afghanistan
Challenges identified through interviews	Lack of integration into community and visibility in community Lack of clear job description Lack of knowledge about issues community members see as important Programme too narrowly focused on family planning Workload is too high and incentives too low Lack of respect Transportation High attrition rate and difficulty recruiting Lack of standardization	Delay in receiving wages and not paid promised salary Lack of benefits and job security Limited opportunities for career advancement Safety during polio vaccination campaigns Provision of drugs and contraceptives High education requirement is barrier in many areas of the country Transportation Lack of expertise in supervisors and trainers	Lack of respect due to volunteer status and no education requirement Lack of salary Lack of trust and visibility in communities Provision of supplies and inadequate supply chain Limited opportunities for advancement and further training High attrition rate and difficulty training replacements Lack of female supervisors and leaders
Programme strengths	Has provided many services and effected change in communities for many decades. Well accepted and integrated into many communities.	Committed government support improves programme sustainability and provides standardization. Empowerment of women who organize together as lady health workers to advocate for better working conditions and wages. Measurable improvement in maternal and child health outcomes.	Integrated intimately into communities through collaboration with community leaders. Broad job description beyond women's health. Inclusion of men. Inclusion of CHWs with low levels of education. Supervision in the field boosts CHW status. Possibility for career advancement from CHW to supervisor.

transportation expenses. Interviews with CHWs in both Egypt and Afghanistan illuminated the fact that most CHWs feel that their remuneration is inadequate, which represents a major barrier to performing their best in the job (*7*,*11*). However, in both countries many CHWs see the satisfaction that they gain by serving others as the primary motivation for performing their job (*7*,*11*). In Afghanistan, 85% of CHWs reported that they receive recognition and appreciation from their communities (*11*).

Challenges and recommendations

In Egypt, the main challenges that the CHW programme faces are due to lack of standardization. Through interviews with raedats, community members and programme coordinators, the challenges were mainly identified as a lack of clear job description and community awareness about the existence and role of raedats. The lack of extensive training was also identified as a problem, and many villagers wished that the raedat were more knowledgeable in issues beyond FP (*7*). Raedats themselves found that their workload was too heavy, incentives too little, that they were not respected enough by community members or healthcare facility staff, and that there was not enough upward career mobility (*7*,*8*,*17*). There is a high attrition rate for these reasons, especially among those with higher levels of education. There is also difficulty recruiting raedats, especially in more conservative parts of the country.

The following are recommendations compiled from reviewed papers about CHWs in Egypt:

- unify and improve training so that it is skills-based and takes place often enough to prevent long waiting times;
- standardize and define the role and responsibilities of CHWs;
- training should more effectively teach communication skills for promoting FP;
- geographical areas should be better defined and coordinated to reduce redundant coverage;
- referrals should not be tied to the organization/facility with which the CHW is associated, but instead should link clients to the nearest/best facility;
- programme expansion to include other aspects of maternal and child health;
- incentives should not be linked to FP acceptors, but instead should be standardized and based on factors such as client satisfaction, quality of home visits and degree of raedat motivation;
- create a standardized supervision system;
- create a database including all organizations with CHWs to be shared; and
- research should be done on a full country scale to determine programme effectiveness and possibilities for improvement.

The LHW programme in Pakistan faces a different set of challenges. In recent years, LHWs have not received their full promised stipends, and wages have not increased adequately in the opinion of many LHWs. Concerns have been raised about community push-back against LHW

initiatives, such as polio vaccination, in some areas. In situations, like these, where safety can be compromised, LHWs feel they should receive higher remuneration (*12*,*13*,*15*,*16*,*18*,*19*). Additionally, there have been problems with the provisions of drugs and contraceptives at the health facilities to which LHWs refer patients; usually due to insufficient communication between federal, provincial and district government tiers (*9*,*15*,*16*,*20*). The lack of provisions at health facilities reduces LHW credibility in communities (*15*,*16*,*20*). Another challenge is insufficient numbers of LHWs in poor and underserved areas, due to the high educational level needed for entry into the CHW programme. In areas that lack educational opportunities for girls, women cannot meet the LHW requirements, so the LHW programme cannot serve these communities (*9*,*21*,*22*). Many LHWs feel that their training could be improved and advocate the inclusion of more skills (*15*,*16*).

The following are recommendations compiled from reviewed papers for the LHW programme in Pakistan:

- reform the district level health system for more appropriate resource allocation;
- incentive structure to make LHWs feel motivated to further their career;
- incorporating LHWs into the government as health employees to provide them with benefits, such as insurance and job security;
- increase coordination between levels of government to reduce supply chain issues;
- expansion of the programme to reach more underserved areas;
- improve training to include emergency obstetric care and more communication skills;
- more referrals to health facilities for particularly vulnerable patient populations;
- increase supervision capacity and reliable vehicles; and
- a system for dealing with or terminating nonperforming LHWs.

The newer CHW programme in Afghanistan faces yet another set of problems. One main theme gained from interviews is a lack of respect and trust for CHWs due to their volunteer status and potentially low level of education (*11*,*14*). Despite this, there is high demand for CHW services, and CHWs feel that often patients are so sick by the time they visit a health post that they can do little to help, which reduces their credibility in the community (*14*). Many CHWs feel that more comprehensive and further training, as well as a salary would help them provide better care (*14*). Another challenge is a lack of provisions from a robust supply chain, which further reduces credibility (*11*,*14*). Similar to Egypt, high attrition and difficulty recruiting is a problem in Afghanistan, and if a CHW steps down, communities can be left suddenly with no access health care or supplies (*14*). A lack of standardized retraining of replacement CHWs remains a barrier, and if CHWs relocate to new communities, it is difficult for them to continue their work due to the bureaucratic recruitment process (*14*). Also similar to the other programmes, a lack of standardized supervision and transportation presents major barriers. Lastly, a lack of female supervisors or managers presents a barrier to the CHW programme in Afghanistan. It is important to have women in leadership positions for the empowerment of women in Afghanistan, and because many families will not allow women to become CHWs if they must interact with nonrelated men (*14*); a situation which is often inevitable due to the lack of female supervisors or managers.

The following are recommendations compiled from reviewed papers for the CHW programme in Afghanistan:

- better provision of drugs and contraceptives through a strengthened supply chain;
- improved visibility of CHWs in communities;
- budget allocated for training replacement CHWs;
- more incentives or salaries for CHWs to ensure programme sustainability;
- improved and expanded training that includes more technical skills;
- improved supervision system with reliable transportation;
- increased involvement and recruitment of women for supervisory, managerial and policy-making positions; and
- undertaking a cost analysis and other research on the programme to assess its effectiveness and cost.

Discussion

All three of the programmes reviewed have effected positive change in their respective countries, and have advanced women's engagement in local communities. While not reviewed in this paper, many measurable determinants of health outcomes have been improved through these programmes, such as improved maternal and fetal health outcomes (*23*–*26*), increased reproductive health uptake and education (*27*–*29*), communicable disease control (*30*,*31*), and positive impacts on nutrition (*32*,*33*). Our goal was to identify strengths and weakness of the CHW programmes in the WHO Eastern Mediterranean Region in order to improve them in the future. Some major themes that arose from the papers reviewed are discussed below.

The common themes and opportunities for improvement include: programme scope and job descriptions; drug and other commodity provisions; quality of training; supervision systems; incentives and motivation; governmental support and coordination between organizations; and visibility of CHWs in communities.

A clear job description with the inclusion of a broad range of methods to improve community health seems to be preferred by CHWs and community members

compared to a narrow programme that only promotes FP, as was the case with the Egyptian programme when it was first founded. The inclusion of men in the programme in Afghanistan, and the wide range of capabilities such as providing education for mental health and substance abuse are strengths that can be used in existing and future CHW programmes. All three programmes have difficulties providing CHWs with the drugs, contraceptives and equipment that they need to serve their communities. This is often due to lack of organization of the national medical supply chain. A lack of necessary commodities decreases the quality of care that CHWs can provide, as well as the status and standing of CHWs in communities. This can be improved by efforts in countries to strengthen their supply chains on a national level.

CHWs from all three programmes desired opportunities for further training. The suggestions range from recommending training for specific skills to restructuring the course to include less theoretical and more technical information. CHWs should be continuously consulted with regards to their satisfaction with training, and their feedback should be taken seriously. Having some type of review process would increase the CHWs feeling of investment in and responsibility and pride for the programme. The inclusion of pictorial training manuals in Afghanistan is a strength that has increased accessibility of the CHW job to more candidates, and can be used in existing or future CHW programmes. Supervision is an important method to ensure programme sustainability and continued satisfaction in communities. Some suggestions for improvement from the three countries include increased standardization and even distribution for CHWs to supervisors. For example, in Pakistan, supervisors are unevenly distributed, with LHW supervisors responsible for 1–40 LHWs depending on the region. Supervision in the field is a strong aspect of all 3 programmes, which boosts CHW status and allows for more comprehensive feedback. There is also a need for more female supervisors, as was noted in Afghanistan, as this would help with the empowerment of women in general, improve the recruitment of new CHWs, and provide motivating examples of career advancement.

Incentives in the form of salaries, commodities, community respect and appreciation, and opportunities for career advancement are essential for the sustainability of CHW programmes. Although CHWs are paid in Egypt and Pakistan, their stipends can be unreliable and untimely, which decreases CHW satisfaction. CHWs from all 3 countries reported that their incentives were not adequate or reflective of their workload, and CHWs have dropped out of all 3 programmes due to better incentives in other jobs. Nonmonetary compensation such as community recognition and respect, acquisition of valued skills, personal growth and development, association with a larger organization that provides identification (badges, uniforms etc.) and a clear role have all been shown to improve CHW satisfaction (*34*). Importantly, opportunity for career advancement is an important source of motivation, and all CHW programmes should allow promotions, as is the case in Afghanistan, where CHWs can be promoted to supervisors and beyond. This can also help increase female representation in leadership. Governmental support is a major strength exemplified by the programme in Pakistan. This has historically made for a sustainable and standardized programme that is well respected in communities. Standardized training and incentive programmes increase adherence to these policies, leading to a more uniformly prepared workforce of CHWs. A lack of coordination between organizations and a lack of clear policy were cited as major problems in Egypt that decreased CHW and community satisfaction. Standardization also helps reduce overlap between organizations and improves programme efficiency.

CHW visibility in communities is important as it increases access of community members to healthcare. Visibility also leads to CHW accountability, in that CHWs who are known to their community are less likely to reserve resources for only friends and relatives, which was a complaint that arose in interviews in Egypt (*7*). One successful practice in Afghanistan to improve visibility has been the development of village health councils that disseminate CHW announcements to the community. Afghanistan has also set an example with communication and collaboration between CHWs and religious leaders who help relay messages through announcements in the community mosque (*14*). LHWs in Pakistan are government workers, which improves their visibility and status in communities. Even efforts such as providing uniforms, in-person visits from supervisors to communities, and regular delivery of supplies can help increase respect for CHWs in communities.

Conclusion

CHW programmes will be increasingly important in achieving health and development goals in the years to come. Countries in the Region can benefit greatly from these programmes, and there have been several successful models. From the older raedat programme in Egypt, to the government-run LHW programme in Pakistan and the recently implemented CHW programme in Afghanistan; all of these have successfully improved the health of the populations they serve and have given women opportunities to engage actively in community health. Lessons can be learned from different characteristics of these programmes, and can be applied when implementing or scaling up CHW initiatives in the Region. More research should be conducted on CHW existing and future CHW programmes in the Region, to learn what effectively works to improve the efficiency and functioning of these programmes. While there have been many research projects measuring the effects of CHW programmes on population health, it would be helpful to have more studies about how to improve CHW programmes to aid them in functioning to the best of their capability.

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Partage des tâches chez les personnels de santé : vue d'ensemble des programmes des agents de santé communautaires en Afghanistan, en Égypte et au Pakistan

Résumé

Contexte : Dans de nombreux pays, les agents de santé communautaire contribuent à réduire les disparités en matière de soins de santé et à améliorer l'accès à des services de qualité.

Objectifs : Fournir une vue d'ensemble permettant de comparer et de mettre en lumière les similitudes et les différences entre les programmes destinés aux agents de santé communautaires en Afghanistan, en Égypte et au Pakistan, et décrire les atouts, les faiblesses et les difficultés de ces programmes.

Méthodes : Des recherches ont été effectuées dans des bases de données scientifiques et dans la littérature grise, notamment PubMed, Medline et la Cochrane Review Library, dans les bases de données de l'OMS et sur des sites Web de littérature grise, notamment ceux de ministères de la santé nationaux. ; 23 articles ont été sélectionnés et inclus à la présente étude.

Résultats : Les trois programmes examinés diffèrent sur le plan de leur organisation, de leur structure, de leur inclusion et au niveau du système de paiement des agents de santé communautaires. Les difficultés essentielles relevées lors de notre analyse comprenaient les points suivants : la sécurité au niveau de l'approvisionnement des produits qui compromet la qualité des services ; le caractère inadéquat et irrégulier des formations ; un système de rémunération imprévisible ou inadéquat ; et un manque d'harmonisation parmi les organisations et les ministères gouvernementaux. Les atouts identifiés sont l'acceptation et la bonne intégration de ces programmes au sein de nombreuses communautés, ainsi que l'existence de soutiens de la part des ministères de la santé, ce qui renforce la pérennité et permet de réglementer les formations et le contrôle de façon harmonisée. Ces atouts ont également favorisé la participation et l'autonomisation des femmes, comme le montre l'organisation, parmi les agents de santé communautaires eux-mêmes, de requêtes visant à obtenir de meilleurs traitements et un plus grand respect pour le travail qu'ils accomplissent.

Conclusions : Nos conclusions devraient alerter les responsables politiques quant au besoin de revoir le champ d'activité des agents de santé communautaires, de mettre à jour les programmes de formation et de donner la priorité aux modules de formation en cours d'emploi ainsi qu'à l'amélioration des conditions de travail. L'efficacité et l'impact des programmes destinés aux agents de santé communautaires ont été mis en évidence à d'innombrables reprises, ce qui démontre que le partage des tâches chez les personnels de santé représente une bonne stratégie pour aborder les objectifs de santé mondiaux.

تقاسم المهام في القوى العاملة الصحية: لمحة عامة عن برامج العاملين الصحيين المجتمعيين في أفغانستان، باكستان، مصر

معظم علي، ريجل فولز

الخلاصة

الخلفية: يساعد العاملون الصحيون المجتمعيون في تخفيف مواطن التفاوت في الرعاية الصحية وتحسين الحصول على الرعاية الجيدة في العديد من البلدان.

الأهداف: الغرض من هذا البحث تقديم نظرة عامة لمقارنة ومقابلة خصائص برامج العاملين الصحيين المجتمعيين في أفغانستان وباكستان ومصر ووصف مواطن القوة ومكامن الضعف والتحديات في تلك البرامج.

طرق البحث: بحثنا في قواعد البيانات العلمية وفي المنشورات الرمادية، بما في ذلك PubMed و Medline ومكتبة مراجعة كوكرين، وفي قواعد البيانات لمنظمة الصحة العالمية، وفي مواقع المنشورات الرمادية بما فيها مواقع وزارات الصحة الوطنية على الإنترنت. وقد أعددنا قائمة قصيرة تتضمن ٢٣ مقالاً لإدراجها ضمن الدراسة.

النتائج: تختلف البرامج الثلاثة التي استعرضناها من حيث التنظيم والبنية الهيكلية، والانخراط في العمل، وبنية دفع الأجور للعاملين الصحيين المجتمعيين. وتتضمن التحديات الرئيسية التي تعرفنا عليها في هذه الدراسة: ضمان تقديم الخدمات دون التقليل من جودتها؛ والتدريب غير الكافي

وغير المنتظم؛ والبنية الهيكلية غير المتوقعة أو غير الكافية للتعويضات والأجور؛ وغياب المعايير القياسية الموحَّدة لدى المنظمات والوزارات الحكومية. بينما تتضمن مواطن القوة التي تعرفنا عليها أن البرامج مقبولة ومندمجة في كثير من المجتمعات، وتتلقى الدعم من وزارات الصحة مما يعزِّز استدامة تلك البرامج، وأن تنظيم التدريب والإشراف يتم وفق أسس قياسية موحَّدة. وقد أدت تلك البرامج أيضًا إلى زيادة مشاركة المرأة وتمكينها، وقد تجلى ذلك في حقيقة أن العاملين الصحيين المجتمعيين قد نظموا مطالبهم بمعاملة أفضل وبمزيد من الاحترام للعمل الذي يقومون به.

الاستنتاجات: ينبغي أن تثير النتائج التي توصلنا إليها انتباه أصحاب القرار إلى ضرورة استعراض نطاق الممارسة للعاملين الصحيين المجتمعيين، وتحديث مناهج تعليمهم، وإعطاء الأولوية للوحدات التدريبية أثناء الخدمة، وتحسين ظروف العمل. أثبت الباحثون في العديد من البحوث مدى فعالية وتأثير برامج العاملين الصحيين المجتمعيين، مما يدل على أن تقاسم المهام في مجال الرعاية الصحية استراتيجية ناجحة تصلح لتحقيق الأهداف الصحية العالمية.

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Addressing health workforce shortages and maldistribution in Afghanistan

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Abstract

Background: Afghanistan has the second lowest health workforce density and the highest level of rural residing population in the Eastern Mediterranean Region. Ongoing insecurity, cultural, socio-economic and regulatory barriers have also contributed to gender and geographic imbalances. Afghanistan has introduced a number of interventions to tackle its health worker shortage and maldistribution.

Aims: This review provides an overview of interventions introduced to address the critical shortage and maldistribution of health workers in rural and remote Afghanistan.

Methods: A review of literature (including published peer-reviewed, grey literature, and national and international technical reports and documents) was conducted.

Results: The attraction and retention of health workforce in rural and remote areas require using a bundle of interventions to overcome these complex multidimensional challenges. Afghanistan expanded training institutions in remote provinces and introduced new cadres of community-based health practitioners. Targeted recruitment and deployment to rural areas, financial incentives and family support were other cited approaches. These interventions have increased the availability of health workers in rural areas, resulting in improved service delivery and health outcomes. Despite these efforts, challenges still persist including: limited female health worker mobility, retention of volunteer community-based health workforce, competition from the private sector and challenges of expanding scopes of practice of new cadres.

Conclusions: Afghanistan made notable progress but must continue its efforts in addressing its critical health worker shortage and maldistribution through the production, deployment and retention of a "fit-for-purpose" gender-balanced, rural workforce with adequate skill mix. Limited literature inhibits evaluating progress and further studies are needed.

Keywords: human resources, health workforce, Afghanistan, public health, training

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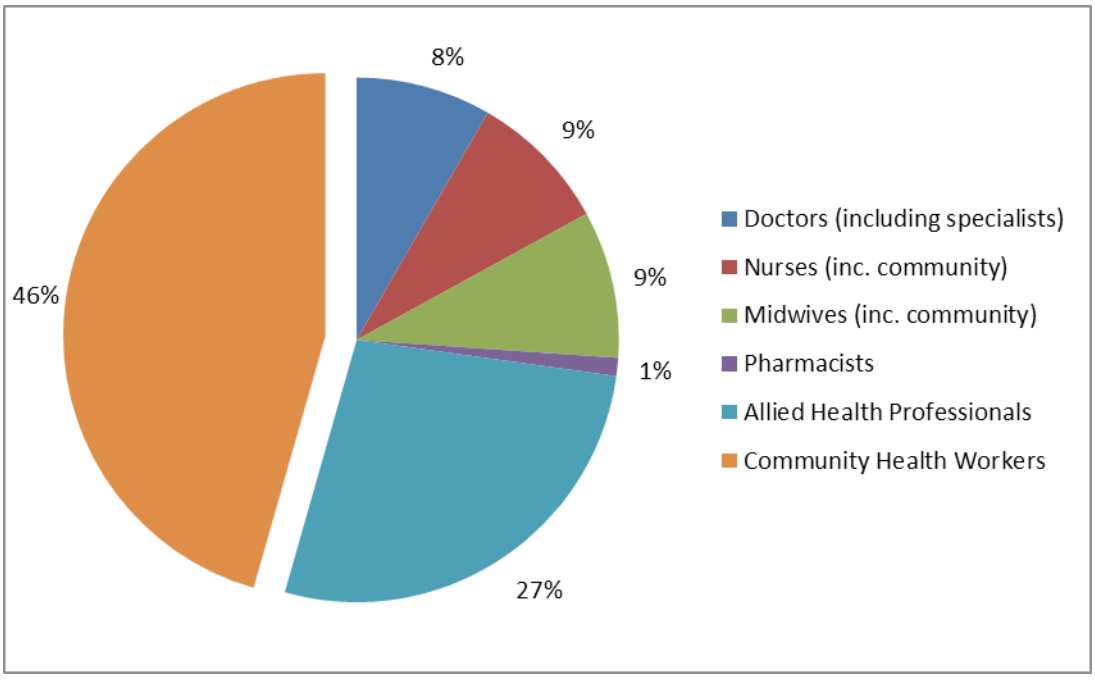
Introduction

The World Health Report 2006 declared a global health workforce crisis; today, more than a quarter of the world's countries still suffer shortages and a global shortfall of 17 million health workers is projected by 2030 (*1*). Since human resources are arguably the most essential asset of any system or organization, strengthening the health workforce and addressing the critical shortage must be made a priority in moving towards Universal Health Coverage (UHC) (*2,3*). Imbalanced distribution, especially in rural and remote areas, poses a barrier in access to quality health services. Half of the world's population lives in rural areas, but 75% of doctors and 62% of nurses serve urban populations, which suggest a need to increase production, deployment and retention of rural-practicing health workers of all cadres (*1*).

Afghanistan has an estimated population of 31.6 million, of which nearly 77% lives in rural settings (Central Statistic Organization 2018 population estimates) (*4*). Afghanistan has the second lowest health worker density in the Eastern Mediterranean Region (EMR), with a ratio of 4.6 medical doctors, nurses and midwives per 10 000 people, considerably below the threshold for critical shortage of 23 health care professionals per 10 000 (*2,4*). This figure breaks down to 1.2 doctors, 2.1 nurses and 1.3 midwives per 10 000 people (*4*). However, the ranges for these densities are wide when comparing provinces; for instance, the density of doctors is eight times greater in Kabul than it is in Kunar (with approximately 0.5 doctors per 10 000 people in Kunar compared to 4 doctors per 10 000 people in Kabul). Nooristan has eight times as many nurses and five times as many midwives compared to its neighbouring province Kunar (with estimated densities ranging 0.5–4.2 per 10 000 people and 0.5–2.5/10 000 respectively) (*4*). Geographic imbalances are prominent as there are 16.7 health workers per 10 000 in rural areas, compared with 36 per 10 000 in urban areas; most qualified health workers are in urban areas serving only 23% of the population (*5*). Doctors, nurses and midwives make 26% of the health workforce, whereas community health workers make up almost 46% (Figure 1).

Afghanistan's critical health workforce shortage is a

Figure 1 Percent of health workforce by cadre (2016) (4)



result of historic underinvestment in education and training, migration, lack of infrastructure and equipment and poor remuneration (2,3). Other challenges also include lack of opportunities for career advancement, staff absenteeism, moonlighting, and weak management (2). Ongoing insecurity, harsh geographical terrain, cultural and socio-economic barriers have also contributed to the overall shortage as well as gender and geographic imbalances in the health workforce. As per the global pattern, many health workers (especially specialists and female doctors) prefer to work in Kabul and other regional centres for a notably better standard of life (i.e. security, employment, transportation, health care and education for their children) (5). In addition, the historic policies limiting girls' education (during the Taliban regime from 1995 to 2001) affecting health workforce production are still felt and encountered today, especially in more rural provinces. While Afghanistan has made significant advancements in the last two decades in increasing female education (World Bank shows female enrolment has increased from 6.6% in 2003 to 40% in 2017), enrolment does not translate into graduation, employment rates, or rural retention. The most recent DHS in 2015 showed 13% of urban females completing some secondary schooling, compared to 5.6 fully completing secondary schooling and only 4.2 completing more; their rural counterparts were 5.2%, 1.5% and 0.6% respectively. Furthermore, in 2003 only a third of health facilities had a female health worker, and only about a quarter of the health workforce was female (1,6). The conservative culture – more pronounced in rural areas – restricts women from receiving health services from male providers, amplifying the need for female health workers.

Afghanistan has been rebuilding its health system, with notable expansion of its Human Resources for Health (HRH). This review provides an overview of interventions used to tackle the critical shortage and distributional imbalances of health workers in rural and remote areas in Afghanistan.

Methods

A review of published and grey literature was conducted, searching PUBMED using key terms, such as: Afghanistan, health workforce, human resources for health, doctors, nurses, midwives, community health workers, retention, incentives, recruitment, deployment, rural, remote, underserved, fragile, fragile-state, post-conflict and low-income, mainly in literature after 2000. In addition to this, national plans, demographic health surveys, and technical documents produced by the Afghanistan Ministry of Public Health, and external development partners, were studied to understand the HRH situation. Unfortunately, there are inconsistencies in the available HRH data which prevents more comprehensive analysis across cadre, province and gender.

Results

Studies have shown that there is no model intervention that can be used to address critical shortages of health workers (7). Afghanistan uses a "bundle" approach, in accordance with the global recommendations to tackle its health workforce challenges (Table 1). Strategies related to recruitment, expanding production, focused deployment and retention have been used to address gender and geographic maldistribution.

Expanding education and production

From 2009 to 2011, there had been a 70% increase in medi-

Table 1 Categories of interventions to improve attraction, recruitment and retention of health workers in remote and rural areas, globally and in Afghanistan

Category of Intervention	Examples from the Global Recommendations (23)	Examples in Afghanistan
Education	- Students from Rural Background - Health professional schools outside of major cities - Clinical rotations in rural areas - Curricula that reflects rural health issues - Continuous professional development for rural health workers	- Recruiting students from rural backgrounds (*8–10,21*) - Creating special community-based cadres, trained, recruited and deployed rurally: CM/E(Community Midwife/ Education) and CHN/E (Community Health Nurse/Education) (*8,9,16,17,19*) - Expanding pre-service training programmes to institutes in remote provinces (*5,7,15,33*) - CHW/CHN/CM curricula are based on rural health issues (*6,7,9,21*) - Continuous professional development (refresher courses for CHW) (*14,15*) - Consideration of preferential admission to meet quotas and rural rotations
Regulation	- Enhanced scope of practice - Different types of health workers - Compulsory service - Subsidized education for return of service	- Introducing new cadres (*5,11,16,17,21,23*) - Enhancing scope of practice, especially for CHN, CM (*21,25*)
Financial	- Appropriate financial incentives	- Hardship allowances (double for women in rural health) (33)
Professional/ Personal	- Better living conditions - Safe and supporting working environment - Outreach support - Career development programmes - Professional networks - Public recognition	- Providing job opportunities to male family members - Public recognition measures - Afghan Midwifery Association (CPD, network)

cal students in Kabul; however, less than 20% medical students graduated from rural regional centers and only 25% were female (*5*). Although the production of female doctors has increased due to gender-based enrollment quotas, their attraction and retention to rural areas continues to pose a challenge towards equitable distribution. In 2012, only a quarter of nursing graduates from Institutes of Health Sciences (usually in more urbanized areas) were female; Afghanistan tackled this issue by expanding nursing education to regional and provincial institutes, and introduced community nursing education in an effort to produce more female nurses in rural areas (*5*).

Acknowledging the immediate need for scaling up the health workforce, HRH National Strategy 2012 targeted training an additional 7000 nurses, 6000 midwives, 800 physiotherapists, 600 psychosocial counsellors, and 20 000 volunteer community health workers, all trained in their provinces and bonded for employment locally, with the aim of retaining graduates in rural regions (*5*). Committed to rural health workforce production, Afghanistan expanded these pre-service trainings to many rural provinces. One study from 2015 showed there were 708 students preparing to graduate in nursing, midwifery, dentistry, pharmacy, physiotherapy and technology from Kabul's Ghazanfar Institute of Health Sciences (GIHS), compared to 2046 at the Institutes of Health Sciences in rural provinces (*4*).

Additionally, Afghanistan increased the number of health professional education institutions from nine medical, one pharmacy and one dental in 2012 to 32 medical, four pharmacy and six dental in 2017 (*4,5*). Its most notable expansion has been with regards to nursing and midwifery: In 2009, there were only 21 pre-service training programmes. Afghanistan introduced community-based nursing and midwifery cadres and expanded nursing and midwifery education to 8 institutes in rural provinces, with an additional 76 community-based pre-service training programmes across most provinces. These community-based trainings are contracted out to private and international NGOs (*4–8*). Furthermore, Afghanistan established a standardized competency-based curriculum, leading to almost no difference in skills between midwifery graduates from private, public and community-based programmes (*9*). Afghanistan also built a national accreditation programme for midwifery education. By mandating that all midwifery schools achieve accreditation, over 91% were in compliance with national standards (*10*). Afghanistan has extended this model in building its accredited Community Health Nurse Education program, and can apply it in training emerging health professionals in bio-medical engineering, medical technology and environmental health.

Despite these efforts, Afghanistan still suffers from a shortage of health workers, and a lowered density of doctors, nurses and midwives from 7.6 in 2010 to 4.6 in 2017, particularly in the rural areas (*4,5*). Deployment of Community Health Workers (CHWs) has become a common strategy to expand primary health care at the community level in many low- and middle-income countries with high rural population densities (*11*). Examples of national programmes include Ethiopia's

30 000 Health Extension Workers, Brazil's 250 000 Community Health Agents, the Islamic Republic of Iran's 91 000 Behvarz, Pakistan's 100 000 Lady Health Workers, and India's 700 000 Accredited Social Health Activists (*11–13*). Afghanistan has been using CHWs for decades to address the shortage of skilled health professionals, especially in rural areas (*14*). Community health workers are the first point of contact for patients in rural and remote areas and are responsible for implementing the Basic Package of Health Services at health posts, serving as village primary care providers (*15*). Given their pivotal role in rural health care, Afghanistan has expanded its programme in the last decade, doubling its CHWs from 20 000 in 2011 to 40 000 in 2016 (of which 50% are female) (*5,14*). Today, CHWs make up almost 50% of the health workforce in Afghanistan (Figure 1) (*4,5*).

Introduction of new cadres

While Afghanistan has introduced multiple new cadres of health professionals, this section outlines two cadres that have specifically addressed the lack of female health workers in rural areas. Afghanistan introduced the community midwife in response to the historically high maternal mortality rate resulting from lack of skilled birth attendants (*6*). Community midwives (CMs) are recruited from and deployed to rural areas and trained in specific community-based pre-service programmes (*16,17*). There is little difference between midwives and community midwives in terms of their training and practice; the main difference is their geographic location (*9,10*). The demand for community midwives in rural areas is high, as seen by the high employability rates of community nominated and educated midwives compared to their urban peers (*9,16*). Furthermore, the production of midwives has increased rapidly, almost 10-fold, from 467 in 2002 to 2167 in 2008, to 3484 in 2012, and 4600 in 2016 (*18,19,20*).

In an attempt to address the shortage of female health workers in rural and remote areas, the community health nurse (CHN) was introduced in 2011 (*21*). While this cadre is not exclusively female, it is an attempt to increase the number of female nurses administering preventative, curative and rehabilitative 'first-line' care (*21*). Since 2011, there have been a total of 54 cohorts in 30 of Afghanistan's 34 provinces, enrolling a total of 1647 students (*21*). Notably, two provinces with over 96% rural population are actively enrolling and producing three cohorts of CHNs simultaneously. Many health facilities have celebrated the impact of the 'female CHN' on increasing the utilization of maternal and child health services.

Strategic rural recruitment and deployment

The strongest motivator associated with rural recruitment and retention is rural origins (*22*). Working environment, respectability, financial incentives and opportunities for professional advancement represent the other personal, professional and social factors (*7,23*). Due to this, efforts have been made to recruit rural and community-nominated candidates, across all cadres, in hopes of increasing their retention in rural areas (*23*).

Community health workers are community members, nominated by a village health council (VHC), and then trained for a four-month period on prevention of infectious diseases, health promotion, family planning, and treatment of simple illnesses. While most CHWs are illiterate, they receive pictographic training manuals and continuous professional development in the form of a three-day refresher-training every six months (*24*). With regard to community midwives, 9th grade rural female students are hand-picked by their communities to attend community midwifery schools; community leaders formalize the nomination through a signed letter of support (*8,17*). Similarly, most CHNs are recruited from, trained and deployed back in provinces where over 80% of the population is rural-residing (*21*).

This strategy of recruiting students from rural backgrounds has yielded higher deployment and retention rates of community nursing and midwifery students, as they have the continued support of their families and the recognition from their communities when they return to serve. According to one study, 96% of community midwifery graduates were employed (63% in rural areas) compared with 74% midwives chosen by the Institutes Health Sciences (43% in rural) and 82% (of whom only 9% in rural) by the National University Entrance Examination (*9*). Almost 60% of CHN graduates are deployed to public sector health facilities, in provinces with over 85% rural populations (*21*). Notably, provinces such as Bayman, Kapisa, Laghman and Uruzgan have a deployment rate over 80%, where over 95% of the population lives in rural areas (*10*).

Financial incentives

Afghanistan has developed a national salary policy to standardize salaries and benefits paid to health care workers employed through the Basic Package of Health Services (BPHS) programme, and to motivate staff to work in rural and under-served areas. The policy includes payments of hardship allowances for rural and isolated areas, up to 250% of their base salary for female health providers (*15,25*). However, it is well recognized that financial incentives are not the only motivating factor in attracting or retaining health workers to rural and remote areas (*26*). One study on midwives in Afghanistan ranked higher salaries in rural areas as lowest motivating factor at 9%, preceded by mandatory service at 33% and family and community support at almost 60% (*7,9*).

Social factors

One of the biggest issues related to the deployment of the health workforce in rural and remote Afghanistan is that of insecurity. One benefit of recruiting and deploying students from rural backgrounds is their existing acclimation to the culture, pace and lifestyle, for those already residing in these insecure areas (*7,17,22*). According to one study related to midwife deployment in Afghanistan, lack of security was cited by 42% as the most important deterrent from opting to work in rural and remote areas, while the remaining 58% reported other concerns including

lack of medical equipment, proper schools for children and difficult living conditions (*6–8,10,26*). This increased insecurity in remote areas further affects the mobility of health professionals, especially females. To increase the retention of female health workers in rural and remote areas, Afghanistan has started to provide opportunities for male family members and spouses to deploy to the same health facilities or villages through establishing linkages and collaboration with the Ministry of Labour and Social Affairs, providing recommendation letters for spouses to facilitate their job search, and improving the housing and schooling facilities around health facilities (*17,23,24*). Additionally, public recognition remains a motivational factor in pursing rural posts; in the case of the community-nominated health workers, midwives and nurses, family and community support and pride facilitate their effectiveness and retention to their communities.

Discussion

Afghanistan has made noteworthy progress in its post-conflict development by increasing the densities of health workers, from 1 doctor, 1.29 nurse and 0.24 midwives per 10 000 people in 2003, to 1.2 doctors, 2.1 nurses and 1.3 midwives in 2017 (*4,6*). Despite these achievements, Afghanistan must continue developing its health workforce to surpass the threshold for critical shortage, and addressing gender and geographic imbalances in order to achieve the ambitious HRH 2030 agenda, UHC and the Sustainable Development Goals.

Since 2003, Afghanistan has doubled its female health workforce and further closing the gender-gap. In 2016, almost 50% of Afghanistan's health workforce is women (Figure 2) (*5,6*). Since 2012, the percent of female allied health workers (dentists, laboratory technicians, radiologists and physiotherapists) increased from 9% to 46% in 2016, while other cadres still lag behind with less than a quarter of their health workers being female (*4,5*). These successes surely have strong implications on improving service delivery and increasing health outcomes. The number of health facilities providing BPHS has been increased from 1087 in 2004 to 1784 in 2011, and now 2604 in 2017 (*6,27,28*). Number of health facilities with at least one female health worker has been increased from 45% (2000) to 74% in 2011 to 92% in 2017 (*4,6,27*). Moreover, as a result of increasing the female health workforce and increasing the quality and availability of maternal health services, the maternal mortality ratio has improved significantly from 1100 (in 2000) to 396 per 100 000 in 2015 (*19,20,28,29*).

In addition to this, Afghanistan's efforts have increased the density of health workers in rural areas from 4.5 health workers per 10 000 (in 2009) to almost 17 health workers per 10 000 (in 2012) (*5,30*). While almost half of Afghanistan's provinces have over 95% rural populations, provinces with the highest rural residing communities like Kunar, Ghazni, Faryab and Helmand still had the lowest densities of doctors, nurses and midwives; their utilization of CHWs at health posts was around the national average (only 0.6 active post/1000) (*4*). While Afghanistan's bundle of interventions has yielded improvements in closing the gender and geographic imbalances, there are still a number of cultural, financial and regulatory barriers inhibiting equitable distribution and accessibility to health workers.

Afghanistan's conservative culture affects recruitment and mobility of female health workers. Permission from the male head of family is necessary for a female to join the health workforce. A male CHW must accompany their female counterparts, fulfilling auxiliary tasks in transportation, management and environmental tasks (*14,15,24,31*). This barrier is not unique to Afghanistan, as gender-based task allocation has been seen with female *Behvarz* in the Islamic Republic of Iran and Lady Health Workers in Pakistan (*32*). While historically there have been barriers to the recruitment and retention of female health workers due to traditional roles, family responsibilities and marriage, there has been an increase in the recruitment of female CHWs and community midwives as acceptability, community satisfaction, trust and improved health outcomes have been observed by their communities (*8,15,32*).

CHWs make up about half of Afghanistan's total health workforce; these CHWs serve their communities on a voluntary basis (*24*). The biggest motivational push factor for volunteers is their desire to serve their community for religious and personal reasons. Recognition, and having the authority (and support from the community) to distribute contraceptives and simple medicines, provide counseling, and refer patients up to health facilities are attractive factors; however, delivering services without pay or remuneration offsets this pull. India, Ethiopia and Pakistan all utilize CHWs in delivering primary care; the only major difference is that their CHWs are salaried employees of the ministries and are often compensated in additional fringe benefits (*12,13,31,33*). Data regarding retention of CHWs are sparse and inconsistent, showing dropout rates ranging from 10–80%; the remuneration model (pay-for-service) and the "Family Health Worker" model (grandfathering school-aged children with the CHW curriculum) are proposed policies to address compensation and retention in Afghanistan (*15,24*). The high expenses, reliance on international assistance and collaboration between stakeholders are also factors to be considered.

Competition with the private sector, due to the considerable salary inequalities and remuneration, is another factor that affects recruitment and retention. Despite financial incentives, such as pay and grading increases, health workers employed by projects/programmes supported by international donors receive considerably more pay and allowances than their civil servant counterparts (e.g. doctors working for NGOs get 50% more salary than civil servants, and 'super-salaried' consultants often receive five times more) (*5,15,33*). NGOs under contracted out arrangement for the implement of BPHS and EPHS are obliged to abide by the national salary policy, in addition to the recruitment guidelines, in order

to reduce competition and inequalities. This overreliance on international donors is not unique to Afghanistan and is an issue faced by many post-conflict health systems in recovery, such as Sudan, Somalia, Democratic Republic of Congo, Cambodia and Zimbabwe (*34*).

While introducing new cadres increases the availability and accessibility of the health workers, multi-sectoral cooperation is required to address the implications of task-shifting and expanding scopes of practice on accreditation, formal recognition, curriculum development and certification. Separating registered nurses and CHNs as different cadres has been a challenge for regulatory bodies, as there are ambiguities in differentiating their scopes of practice (*21*).

Finally, there is little literature discussing the strategies used by low- and middle-income, developing, or post-conflict countries on addressing the shortage of health workers. Inconsistencies in data, from varied national and international sources have resulted in weaker evidence. There are even fewer studies documenting the effectiveness or impacts of these interventions on rural and remote recruitment and retention (*26*). Further studies and more specific data stratifying for cadres, gender and geographic location would be helpful in monitoring the direct impact of these interventions and evaluating the continued challenges in distribution and retention.

Conclusion

Despite the insecurity and geographic, economic and social barriers, Afghanistan is working to address its health workforce shortage, gender and geographic maldistribution through a bundle of interventions to achieve strategic recruitment, production, deployment and retention. Afghanistan has made progress in reducing gender imbalances and improved the availability of health workers in rural areas, resulting in improvements in access to health care and health indicators. However, the health system and health workforce challenges continue to have shortages with skill imbalances, rural deployment and concerns with the quality and performance of health workers. The need for further strengthening the health workforce remains pressing, including: expanding education capacities with emphasis on the quality of education; improving health systems management to retain motivated and well trained health workforce; and strengthening health workforce governance through improving engagement and coordination of leadership and all relevant stakeholders.

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Competing interests: None declared.

Remédier à la pénurie et à la mauvaise répartition des personnels de santé en Afghanistan

Résumé

Contexte : L'Afghanistan présente la seconde plus faible densité de personnels de santé et le niveau le plus élevé de population rurale dans la Région de la Méditerranée orientale. L'insécurité permanente, les barrières culturelles, socioéconomiques et réglementaires ont également contribué aux déséquilibres entre les sexes et les régions géographiques. L'Afghanistan a mis en place un certain nombre d'interventions pour remédier au problème de pénurie et de mauvaise répartition des personnels de santé.

Objectifs : La présente analyse donne un aperçu des interventions mises en place pour remédier à l'importante pénurie et à la mauvaise répartition critique des personnels de santé dans les zones rurales et isolées de l'Afghanistan.

Méthodes : On a procédé à une analyse de la littérature (y compris les publications de revues à comité de lecture, la littérature grise et les rapports et documents techniques nationaux et internationaux).

Résultats : Si l'on veut attirer et fidéliser les personnels de santé dans les zones rurales et isolées, il est nécessaire de mettre en place toute une série d'interventions pour relever ces défis pluridimensionnels et complexes. L'Afghanistan a créé des établissements de formation dans les provinces isolées, ainsi que de nouvelles catégories de praticiens communautaires. Le recrutement et le déploiement ciblés sur les zones rurales, les incitations financières et le soutien familial sont d'autres approches citées. Ces actions ont amélioré la disponibilité des personnels de santé dans les zones rurales, ce qui a permis de renforcer la prestation de services et les résultats sanitaires. Malgré ces efforts, des défis persistent, notamment la mobilité limitée des personnels de santé féminins, la fidélisation des personnels de santé communautaire bénévoles, la concurrence du secteur privé et les difficultés posées par l'élargissement des champs d'exercice des nouvelles catégories de praticiens.

Conclusions : Des progrès notables ont été accomplis en Afghanistan, mais le pays doit poursuivre ses efforts pour remédier à la pénurie critique en matière de personnels de santé et à leur mauvaise répartition grâce à la production, au déploiement et à la fidélisation d'une main-d'œuvre rurale « adaptée », avec un juste équilibre entre les sexes et faisant montre d'un éventail de compétences adéquates. Cependant, la littérature est peu fournie, ce qui ne permet pas d'évaluer les progrès et d'autres études sont nécessaires.

التصدي لنقص القوى العاملة الصحية، وسوء توزيعها في أفغانستان

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الخلاصة

الخلفية: تحتل أفغانستان الموقع الثاني لأقل كثافة للقوى العاملة الصحية، وكذلك أعلى مستوى للسكان الذين يقطنون في الأرياف في إقليم شرق المتوسط. كما ساهم كل من استمرار انعدام الأمن، والحواجز الثقافية والاجتماعية والاقتصادية والتنظيمية أيضاً في اختلال التوازنات بين الجنسين وفي اختلال التوازنات الجغرافية. وقد أدخلت أفغانستان عددًا من التدخلات لمعالجة نقص العاملين الصحيين وسوء توزيعهم.

الأهداف: تقدم هذه المراجعة لمحة عامة عن التدخلات التي تم إدخالها لمعالجة النقص الجسيم وسوء التوزيع في العاملين الصحيين في المناطق الريفية والنائية في أفغانستان.

طرق البحث: أجريَت مراجعة للمنشورات (والتي تتضمن المطبوعات المنشورة بمراجعة الزملاء الأقران، والمنشورات الرمادية، والتقارير التقنية الوطنية والدولية والوثائق).

النتائج: يتطلب اجتذاب واستبقاء القوى العاملة الصحية في المناطق الريفية والنائية استخدام حزمة من التدخلات للتغلب على هذه التحديات المعقدة والمتعددة الأبعاد. فقد وسعت أفغانستان مؤسسات التدريب في المقاطعات النائية، وأدخلت كوادر جديدة مجتمعية من الأطباء الممارسين. ومن المقاربات الأخرى التي أشير إليها التوظيف الذي يستهدف تحقيق غاية محددة، ونشر العاملين الصحيين في المناطق الريفية، وتقديم الحوافز المالية والدعم العائلي. وقد زادت هذه التدخلات من توافر القوى العاملة الصحية في المناطق الريفية، مما أدى إلى تحسين تقديم الخدمات والمخرجات الصحية. وعلى الرغم من هذه الجهود، لا تزال هناك تحديات قائمة منها: محدودية تنقل العاملات الصحيات، والاحتفاظ بالقوى العاملة الصحية المجتمعية التطوعية، ومنافسة القطاع الخاص والتحديات التي تواجه توسيع نطاق ممارسة الكوادر الجديدة.

الاستنتاجات: حققت أفغانستان تقدماً ملحوظاً، ولكن يجب مواصلة الجهود في معالجة النقص الجسيم في العاملين الصحيين وسوء توزيعهم من خلال إنتاج ونشر واستبقاء مزيج كاف من المهارات في القوة العاملة الريفية التي تفي بالأغراض المنتظرة منها وتتسم بتوازن الجنسين فيها. إلا أن ندرة المنشور حول هذا الموضوع يحول دون تقييم التقدُّم المحرَز، ويوجب مواصلة الدراسات حوله.

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Transformation of nursing education: the experience of Bahrain

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Abstract

Nursing and midwifery education has developed significantly in Bahrain, and in particular the transformation that took place with the establishment of the College of Health Sciences in 1976. The institution played a pioneering role in national health professions education and meeting national and regional needs for nurses and midwives. This review aims to examine those strategies that enabled transformation of nursing education and the integration of contemporary nursing education models. Key to the transformation was development of a system of a competency based, student-centred educational programme; introduction of a balance between nursing's health-related and curative functions in the curriculum that broadened the scope of nursing's role; faculty development; active collaboration between education and nursing services in curriculum planning and implementation; and initiatives implemented to fund nursing education and to ensure the quality of the programmes. In 1984, only 15% of posts requiring a minimum registered nurse qualification were filled by Bahrainis. However, the rate of national nurses in the workforce has increased steadily, and today Bahrainis constitute 62% of the nursing workforce in the country. Thus, transformation of nursing education has been the pillar for shaping the nursing profession.

Keywords: nursing education, curriculum development, institutes and academies, capacity building, Bahrain

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Introduction

Like other countries in the Region, Bahrain has experienced major demographic, economic, social and technological changes in the past five decades. These changes have had direct and indirect impact on the health needs of individuals and families and community's expectations, as well as the health system in general.

Investment in the development of a national health workforce has been one of the most impressive achievements that has occurred in Bahrain's health system. One of the important approaches by the Ministry of Health to meet the need for a national health workforce was to develop strategies to transform health professions' education, including nursing and midwifery education, and to train more Bahraini nurses to meet the shortfall in the national workforce.

From its early inception, nursing and midwifery education in Bahrain continued on the path of reform. It was in the mid-1980s when a major curriculum re-evaluation was made followed by the adoption of a series of innovative curriculum models. The focus of the reform was on nursing education structure, processes and outcomes. This article reviews development of nursing education in Bahrain, highlighting the transformation that took place with the establishment of the College of Health Sciences in 1976 and the role it played in meeting national and regional needs.

Early years

The first school of nursing in Bahrain was established in 1959, enrolling seven women in its formal nurse training programme and who had completed primary or intermediate school education as a requirement for entry. In 1968, the health department developed a plan for a comprehensive health programme, which included training programmes for Bahrainis in all health fields; establishment of a network of primary health care centres covering all the country; strengthening preventive medicine and developing a medical records department (*1*).

In 1970; the requirement for entering into nursing was raised to completion of secondary school education; and by 1973 the school was moved into a new building with better facilities for teaching and learning, the Yousif Bin Ahmed Kanoo School of Nursing (*2*).

The output from the School of Nursing from 1963 until 1978 was 147 nurses only. To address this situation, the government established the College of Health Sciences (CHS) in 1976 by amalgamating the Yousif Bin Ahmed Kanoo School of Nursing with CHS in order to facilitate the preparation of a range of nursing and allied health professionals. CHS was established in collaboration with the American University of Beirut, Lebanon, and this move had the effect of bringing nursing into the higher education system and full student status was conferred to nurses in training.

Further progress was made in 1981 when the college embarked on a comprehensive system of nursing education characterized by a unifying curricular framework, which offered a career ladder that integrated the academic and professional dimension of nursing, and the educational model is fully described by Kronfol and Affara (1982) (3). During the same year, collaboration was established with the University of Illinois at Chicago, United States, to support faculty development and further develop the allied health and nursing programmes through the signing a memorandum of understanding between the two institutions.

The college founders had a desire to graduate health professionals who had mastered the set of competencies relevant to their professional roles. To reach this goal, a competency-based curriculum model – referred to as the professional performance situation model (PPSM) – was adopted for future educational planning (4). The main features of the new curriculum were its emphasis on identifying and planning for mastery of the necessary competencies namely identifying those abilities, skills, knowledge, judgments, attitudes and values required for effective role performance (5). Programmes that were developed or revised reflected this approach to educational planning, thus making the teaching and learning process student-centred. The other major shift was developing a conceptual framework that guided the nursing curricula by dealing with health as it did with illness; shifting from the medical model-based curriculum that focused on curative nursing functions to one that introduced a balance between nursing's health and curative functions. The scope of nursing was broadened to include not only the individual but also the family and the community. Furthermore, by making the problem-solving approach a common element in every nursing course and the nursing process a basic tool for practice, future graduates would be able to make sounder clinical judgments and apply systematic and rational approaches to the delivery of nursing care (6).

To ensure having qualified nursing and midwifery teachers, all novice nursing and allied health teachers had to undergo a one-year health professions education programme run by the educational development centre. The programme was established in the early 1980s as part of a faculty development plan. In addition, Bahraini nursing faculty was sent abroad on government scholarships to obtain their doctorate and master's degrees in different specialties (7).

In 1984, only 15% of posts requiring a minimum registered nurse qualification were filled by Bahrainis. However, the rate of national nurses in the workforce has increased steadily. In 1991, Bahrainis constituted 42% of the nursing workforce in the country. In October 2011, CHS governance was moved from the Ministry of Health to the University of Bahrain.

Current situation

Nursing education's mission is consistent with the Bahrain Economic Vision 2030 (8) as well as with Bahrain's Health Strategy, which aims to develop highly skilled healthcare professionals and improve delivery of quality healthcare. Nursing education is currently offered by two universities, the University of Bahrain, which is the main public university, and the Royal College of Surgeons Ireland – Medical University of Bahrain (RCSI-MUB), which is a private university. Both universities offer undergraduate and postgraduate programmes.

Over the past decades, the Nursing Division has evolved to become a reputable training hub in the Region. In August 1990, the CHS Nursing Division was designated as the first WHO Collaborating Centre (WHOCC) for Nursing Development in the Eastern Mediterranean Region (EMR). In June 1992, the CHS Nursing Division WHOCC was accepted as a full member in the Global Network of the WHO Collaborating Centres.

The First Global Network of WHO Collaborating Centres (WHOCC) for Nursing and Midwifery Conference was organized in March 1996 by the WHO Collaborating Centre for Nursing Development in Bahrain, in collaboration with Yonsei University WHO Collaborating Centre for Research and Training for Nursing Development in Primary Healthcare in Korea, which was the Secretariat of the global network then. The global conference was held in Bahrain under the theme 'Nurses and Midwives: Making a Difference'. Ever since its establishment, the CHS has endeavoured to function as a centre of excellence in nursing education.

The World Health Organization has played a vital role in developing human resources for health in Bahrain including nurses and midwives. Through the collaborative programme between the WHO Regional Office for the Eastern Mediterranean and the Ministry of Health, technical support was provided to CHS since its inception in transforming nursing education in Bahrain. In addition, over the years Bahrain has received many WHO designates from the Region who have undergone training programmes in various health fields, both tailor made and regular programmes.

The Gulf Cooperation Council (GCC) countries' Nursing Technical Committee adopted WHO recommendation to have one entry level into the profession and to limit categorization of nursing personnel. In response to this recommendation, Bahrain started the generic Bachelor of Science degree in nursing in 2003 as a requirement for entry into practice.

At present, nationals constitute 62% of the nursing workforce in Bahrain. CHS has been instrumental in meeting the country's need for nurses both at the general and the specialist levels, and 4329 nurses graduated from the College from 1978 to 2016. Moreover, 858 nurses graduated from the generic and the bridging nursing

programmes from RCSI-MUB since its establishment in Bahrain in 2006.

Enabling factors and strategies supporting transformation

The following presents the strategic changes and the enabling factors that supported transformation of nursing education in Bahrain.

Collaboration and partnership

Responding to the demand for a reform of nursing practice, which in turn needed a reform in nursing and midwifery education, a strong triangulation between nursing practice, nursing education, and the community was established and formed the basis for adopting a collaborative approach to reform education in Bahrain. The context in which society and nursing interact was analysed, and beliefs and values about society's state of health, nursing profession, learning and teaching were identified. These made up the core concepts that constituted the conceptual framework for an all-encompassing curriculum reform and innovation in undergraduate and specialized nursing education programmes (*3*).

Competency-based curriculum (CBE)

Collaboration and partnership among all concerned continued along the path of nursing education reform, resulting in a Competency-Based Education (CBE), which aimed to produce competent nurses and midwives aligned with the demands of nursing practice and a changing society. The process for competency development was initiated early in 1984 and the curricula for all programmes were reviewed. Competencies were grouped under three domains: cognitive, affective, and psychomotor skills, while faculty strived to create measurable and observable outcomes that allowed for flexibility and innovation.

Case-based learning (CBL) curriculum

A review of nursing education strategy in 1995 was an outcome of the strategic plan for nursing reform in Bahrain (*9*). A curriculum planning task force was formulated in 1996 to spearhead a review of all curricula. Consensus was reached to adopt the Case-Based Learning (CBL) curriculum in 1996 and the CBL was fully implemented in 1998 (*10*). The cases used in the new reformed curricula were of real individual clients, families or community cases. The case-based character provided learners with an insight into the reality into the profession for their role as nurses, and it also fostered students' self-direction, problem solving and critical thinking abilities.

The CBL embedded the competencies and methodology of teaching and learning in 60 to 70 cases of common health problems in Bahrain, and these cases constituted the undergraduate nursing curriculum. The CBL called for a true partnership between practice and education and at all levels, from planning to implementation and assessment of learning. Adopting CBL meant that students and tutors take an active participatory role in the whole teaching–learning process. Students, being true partners in learning, called for the introduction of 'student portfolios', which is a purposeful collection of student work accumulated over time. It reveals students' learning, achievement and development, and evaluates the strengths and weaknesses of their work. Thus, it became an effective way for students to think about how they could improve future work.

Inter-professional learning

Bahrain was a pioneer in adopting Inter-Professional Learning (IPL) initiatives. By the mid-1990s several courses were delivered jointly to students from different health science programmes; these included English language, anatomy and physiology, and basic life support. In 2003, colleges of nursing and medicine jointly planned and convened several workshops related to ethical issues faced in clinical practice. These initiatives were taken a step further to include more collaborative teaching and learning projects such as communication, leadership and management and conducting joint research seminars. (*11*).

Information technology and E -learning

In a true spirit of innovation, advanced information technology for teaching, learning and research was introduced. It provided faculty and students with access to the tools for the successful delivery and interaction between each other, and it enhanced the nursing curriculum implementation. Students were provided with a laptop and connectivity to a virtual learning environment. Training on the latest technology solutions to enhance faculty and students' communication and academic alliance were made available.

Clinical teaching and learning

Perhaps most dissatisfaction observed was with students' clinical competencies (*12*). The integration of clinical teaching and learning experiences for clinical situations, and the expectations of the community within the healthcare system, was ineffective. Taskforces were formulated to study the clinical teaching and learning aspect of the curriculum with strong liaison between education and nursing services. Several changes were introduced to enhance the quality of clinical learning, these included site preparation prior to commencing student teaching and learning and the preparation of registered nurses for a preceptorship role; this model ensured that students work directly with patients and the healthcare team.

Students were exposed much earlier to clinical learning and were provided with more responsibilities in varied clinical situations from simple to complex. Assessment methods were modified to reflect the expected course outcomes and aligned to the programme's terminal competencies.

As a precursor to clinical placement, nursing education made huge advances in the establishment of 'Nursing Skill Laboratories' that adhere to an international standard, and provide a safe learning environment for students to attain psychomotor skills and clinical competencies.

Approaches to funding nursing education

Tamkeen scheme

Tamkeen (Arabic word meaning 'empowerment') is a semi-governmental organization established in 2006 as part of Bahrain's national reform initiatives and in line with Bahrain's economic vision (*13*). It is tasked with developing the public and private sector as key drivers of economic development and aims at creating employment opportunities, enabling nationals to further their skills and advance their careers in all sectors including health through scholarships, providing support for training and education and fostering creation of enterprises. Support is provided to both individuals and institutions.

The College of Health Sciences and the Royal College of Surgeons in Ireland partnered with Tamkeen as a source of funding towards attainment of professional certifications. To encourage Bahraini candidates to enter the private sector, the private health services provide written employment assurance to the candidates who wish to join their nursing workforce upon completion of their nursing studies. Tamkeen then provides sponsorships to these candidates to study nursing at the public and private universities in the country.

Quality of education and accreditation

Quality improvement in nursing education is within the context of the wider education reform project in the country, which aims to ensure quality of education at all levels within the country and is implemented by the Bahrain Education and Training Quality Authority(BQA), established as an independent authority in 2008 (*14*). Nursing education in Bahrain, both government and private, has received the confidence for the Bachelor of Science in Nursing (BSN) and Bridging RN (registered nurse)–BSN programmes from the Higher Education Review unit at BQA. Both nursing institutions' BSN programmes are classified on the National Qualification Framework (NQF) scale at level 8. This NQF classification of qualifications is according to a set of criteria for specified levels of learning achieved. This is to improve the quality of education, transparency, access and progression. Graduates are expected to work in the nursing profession in the healthcare sector and they may also undertake postgraduate studies in healthcare-related specializations. The last report by BQA placed nursing and midwifery education at university levels in the top category of tertiary educational institutions in Bahrain.

Research

Education reform would have been deficient had it not been based on the spirit of inquiry and the nurturing of research culture. Varied means of inquiry were adopted right from the beginning of 1980s. These included gathering of expert opinion, use of nursing process, surveys, and literature search to understand current nursing practice. The concept of systematic thinking embedded in research was introduced in all nursing programmes. Research was introduced in its proper form in 1984 with the establishment of the BSN bridging programme and it became an essential concept in all specialty programmes. Students also learn to utilize research findings in delivering care as an evidence-based practice approach.

Conclusion

The last five decades have witnessed important developments in nursing and midwifery education in Bahrain. The increased demand to deliver high-quality nursing care to the citizens and residents in Bahrain required a transformation of nursing education. One of the key success factors in transforming nursing education in the country was using a systematic approach to develop a national education system that broadened the scope of nursing role and enabled graduates to think critically and respond to change in the healthcare system. One of the key strategies in the process was to bridge the gap between education and practice by putting mechanisms in place to actively engage the nursing services from the first stages of the educational programme planning to programme implementation and evaluation. Another strategy included the adoption of a reality case-based model in which nursing students bridge the gap between education and clinical practice from the early stages of their education

Technical support received from WHO over the years and collaboration and twinning with other regional and international educational institutions contributed to the reform of nursing education in Bahrain. Investment in the country's human capital included faculty development in nursing, enabling the health sciences educational institutions to respond to change. One of the key success factors in transforming nursing education in the country was visionary leadership and using a systemic approach to develop academic programmes in nursing and midwifery. To conclude, transformation of nursing education in Bahrain will continue to shape the future practice of nursing, respond to change in society and contribute to the improvement of health system performance and the provision of quality healthcare.

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Transformation des programmes d'éducation en soins infirmiers : l'expérience de Bahreïn

Résumé

La formation en soins infirmiers et obstétricaux a évolué de manière importante à Bahreïn ; on peut noter, en particulier, la transformation qui s'est opérée depuis la création du Collège des sciences de la santé en 1976. Cet établissement a joué un rôle pionnier dans les programmes éducatifs nationaux destinés aux professions de la santé et a permis de satisfaire les besoins en matière de personnels infirmiers et de sages-femmes aux niveaux national et régional. La présente analyse a pour but d'examiner les stratégies qui ont permis de transformer la formation en soins infirmiers et d'y intégrer des modèles éducatifs contemporains. Les facteurs décisifs de cette transformation ont été l'élaboration d'un système de programme éducatif centré sur les étudiant(e)s et fondé sur les compétences ; l'instauration, dans le programme d'enseignement, d'un équilibre entre les fonctions liées au maintien de la santé et les fonctions curatives du métier d'infirmier, ce qui a permis d'élargir le champ d'activité de ce rôle ; le développement du corps enseignant ; la collaboration active entre services éducatifs et services de soins infirmiers dans la planification et la mise en œuvre des programmes d'enseignement ; et les initiatives lancées pour financer l'éducation en soins infirmiers et assurer la qualité des programmes. En 1984, seuls 15 % des postes exigeant une qualification minimale d'infirmier(-ière) agréé(e) étaient pourvus par des Bahreïnites. Cependant, la proportion de ressortissants nationaux dans les personnels infirmiers n'a cessé d'augmenter, et aujourd'hui les Bahreïnites représentent 62 % des personnels infirmiers de leur pays. Ainsi, la transformation de la formation en soins infirmiers a été le pilier de la restructuration de la profession infirmière.

التحول في تعليم التمريض: خبرات من مملكة البحرين

مُيَسَّر عوض الله، بتول المهندس، فاريبا الدرازي

الخلاصة

شهد تعليم التمريض والقبالة تطورًا كبيرًا في البحرين، ولا سيما التحول الذي حصل مع إنشاء كلية العلوم الصحية في عام ١٩٧٦ . فقد أدت كلية العلوم الصحية دورًا رائدًا في تدريب المهن الصحية على الصعيد الوطني وتلبية الاحتياجات الوطنية والإقليمية من الممرضات ومن القابلات. وتهدف هذه المراجعة إلى دراسة الاستراتيجيات التي مكّنت من حصول التحول في تعليم التمريض وإدماج نماذج التعليم المعاصرة في التمريض. وكانت أهم مقومات التحول تطوير نظام قائم على الكفاءات، وبرنامج تعليمي يركز على الطالب؛ وإدخال التوازن بين الوظائف التمريضية المتعلقة بالصحة والوظائف التمريضية المتعلقة بالعلاج في المناهج الدراسية التي وسعت نطاق دور التمريض؛ وتطوير كلية التمريض؛ والتعاون الفاعل بين تعليم التمريض وبين خدمات التمريض في تخطيط المناهج التدريسية وفي تنفيذها؛ وتنفيذ مبادرات لتمويل تعليم التمريض وضمان جودة البرامج. ففي عام ١٩٨٤، لم تكن الممرضات البحرينيات يشغلن أكثر من ١٥٪ فقط من الوظائف التي تتطلب ممن يشغلها في الحد الأدنى مؤهلات الممرضة المسجلة. بيد أن معدل القوى العاملة الوطنية في التمريض زادت زيادة مطردة، واليوم تشكل الممرضات البحرينيات ٦٢٪ من القوى العاملة في التمريض في البلاد. وهكذا كان التحول في تعليم التمريض هو الدعامة لتشكيل مهنة التمريض.

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Meeting on health workforce observatories in the Eastern Mediterranean Region[1]

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Across the Eastern Mediterranean Region (EMR) almost all countries are facing challenges related to health workforce status, including personnel shortages, imbalance in distribution, poor performance, safety and security, and migration (*1*). However, Goal 3 (*2*) of the Sustainable Development Goals (SDGs) highlights the need for substantial increases in the health workforce recruitment, development, training and retention (*3*). To this end, the sixty-ninth World Health Assembly endorsed the Global Strategy on Human Resources for Health: Workforce 2030 (GSHRH) (*4*), and adopted a resolution (WHA69.19) (*5*) in support of its implementation. Informed by the GSHRH, the EMR has endorsed the Framework for Action for Health Workforce Development (*6*) to accelerate addressing health workforce challenges.

Access to reliable and updated health workforce information has been a serious gap in the Region (*1*), which led to the creation of health workforce observatories (*7*) as a mechanism to improve health workforce information availability, analysis and use for policy-making. Regional and national health workforce observatories provide a platform for sharing and dissemination of information as well as for policy dialogue to strengthen health workforce capacities at the regional and country levels. However, there is a need to review the status of such observatories and reorient their functions in order to strengthen their role in response to health workforce developments.

To this end, a meeting on EMR health workforce observatories to discuss these issues was organized by the WHO Regional Office for the Eastern Mediterranean (WHO/EMRO) in Cairo during October 23–24, 2017, Cairo, Egypt (*8*). Participants attended from Afghanistan, Egypt, Islamic Republic of Iran, Jordan, Morocco, Oman, Palestine, Saudi Arabia, Sudan, Syrian Arab Republic, Tunisia, United Arab Emirates, as well as representatives from the Organisation for Economic Cooperation and Development (OECD), the USAID funded HRH2030 programme, and other leading experts.

The objectives of the meeting were to:

- review health workforce information challenges in the Region;
- discuss the National Health Workforce Accounts as a tool, including a priority set of indicators to be collected in countries;
- agree on the next steps to strengthen mechanisms, such as health workforce observatories, that ensure adequate collection of data for priority indicators and improving health workforce information; and
- review and agree on future directions of health workforce observatories in the EMR.

The meeting was inaugurated by Dr Zafar Mirza, Director of Health Systems Development, WHO/EMRO, who emphasized the need for national and regional commitments to strengthen health information systems (HIS), in order to ameliorate issues of health workforce production, retention, quality, performance and distribution.

Summary of discussions

Health workforce information challenges and developments

Despite the major challenge of having incomplete, contradicting or outdated data, some notable improvements were highlighted, including Morocco's development of an evidence-based response to tackle the issue of their aging workforce; Afghanistan's policy development to address rural workforce retention; and the Islamic Republic of Iran's creation of a databank and centre for human resource health (HRH) research within the Ministry of Health to tackle structural problems in data collection. Common challenges remained, including:

- scarcity of and incomplete data
- variation in definitions of health workforce categories
- lack of data on registered and active workforce
- weak data on attrition, international mobility and unemployment
- absence of complete information on private sector health workforce
- discrepancies between data producers and duplications in reported numbers
- under-developed digitalized records and databases in certain countries
- lack of transparency between HRH stakeholders and political divisions.

[1] This report is extracted from the Summary report on the meeting on health workforce observatories in the Eastern Mediterranean Region. Cairo: WHO/EMRO; 2017 (http://applications.emro.who.int/docs/IC_Meet_Rep_2018_EN_16777.pdf).

National Health Workforce Accounts

WHO has initiated National Health Workforce Accounts (NHWAs) as a tool to strengthen health workforce information through facilitating standardization and comparability of health workforce information systems for interoperability and to support tracking health workforce policy and performance. The NHWA consists of a handbook detailing 78 indicators in 10 modules, implementation guide and on-line platform. NHWA offers a set of indicators that can help countries identify appropriate and feasible indicators to monitor their health workforce.

Defining information required

Discussions focused on identifying priority health workforce indicators by reviewing strategic objectives and their corresponding monitoring and evaluation indicators from the Regional Framework for Action. In addition to these indicators, participants debated the addition of a number of disaggregates for certain indicators such as gender, geographic distribution, expenditure on private education or resignation from the public sector. It was noted that most indicators were qualitative in nature, but must be translated into quantitative measures for data collection, monitoring and evaluation at the country level.

Sourcing information

In light of the identified priority indicators, it was emphasized that significant data would be required. An overview was provided on the importance of investing in data collection systems, data management standards, governance, infrastructure, support and dissemination for data use. Additionally, identifying partners and institutions that produce or use health workforce data, improving data generation and building capacity for data collection are important in strengthening health workforce information.

Health workforce observatories as a mechanism for data sourcing and maintenance

Health workforce observatories have been used globally as a mechanism to improve health workforce information and evidence research over the last decade. Country experiences have indicated that having strengthened health workforce information was an essential building block for developing evidence-based HRH policies to address quality, performance, accessibility, acceptability and availability of information. Thus, health workforce observatories serve as platforms for policy analysis, research, dialogue and advocacy.

Future direction of health workforce observatories

In order to have effective and sustainable health workforce observatories, participants identified the importance of having political commitment, stakeholder collaboration, and sustainable financial resources. Additionally, participants evaluated observatories with regards to their function, organization and regulation. With regards to leadership and coordination of the observatories, a national forum or steering board, headed by the ministry of health, needs to be instituted in order to institutionalize the observatory and create sustainability. The purpose of this body would be the coordination of stakeholders (including the private sector), in order to agree on rules and regulations, define policies and procedures, and evaluate their implementation.

Next steps

1. undertake a stakeholder analysis in countries to build a basis for multi-stakeholder platforms;
2. involve academic institutions in establishing research agendas for strengthening health workforce observatories, and the use of information for decision-making and policy formulation.

Recommendations

To Member States

1. perform evaluation for the effectiveness and possible expansion of datasets and indicators for HRH observatories;
2. perform mapping and assessment of data sources and use of health workforce information;
3. review NHWAs and identify further indicators specific to their context, if needed.

To WHO

1. establish a communication forum;
2. coordinate / conduct capacity building activities for data analysis, research methods and development of policy briefs.

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Framework for action for health workforce development in the Eastern Mediterranean Region

Strategic objective	Strategies	Interventions
1. Develop and implement comprehensive health workforce policies and strategic plans to optimize health workforce availability, accessibility, acceptability quality and performance, based on an understanding of labour market dynamics	1.1. Scale up and sustain the production of health workers with appropriate quantity, quality and relevance to respond to the needs of health services	Assess the current and future needs of number, type and competencies of health workers, building consensus around long-term projections and scenarios for supply of health workers to fit with future demand of numbers and skill mix.
		Assess and plan the alignment of the production capacities of health workers with appropriate skill mix in accordance with current and future needs through expanding educational capacities and infrastructures; recruiting and retaining adequate numbers of competent and motivated educators/ trainers and introducing innovative teaching and learning strategies, approaches and tools.
		Adopt enrolment criteria and selection procedures to attract, admit and retain qualified and motivated candidates for health professionals' education.
		In countries with conflict, explore strategies to overcome the interruptions in education of health professionals.
	1.2. Improve recruitment, deployment, retention, motivation and performance of health workers	Analyse imbalances in the geographical distribution of health workers and their causes, through monitoring health labour market dynamics (in- and outflows, choice of practice location, etc.).
		Develop/implement regulatory, financial, professional and personal support measures to mitigate the effects of health workforce imbalances and to optimize the deployment and retention of health workers in areas with unmet service needs.
		Introduce/strengthen continuing professional development, linked to career development and relicensing, for all categories of health workers.
		Establish effective personnel administration systems with appropriate management information systems and dashboards to support evidence-informed decision-making.
		Identify and implement measures to reduce and eventually eliminate absenteeism without recognized and approved cause.
		Ensure that the defined scope of practice exploits the potential contribution of each professional cadre with full utilization of their competencies, e.g. nursing and midwifery.
		Ensure that health workers have access to infrastructures, equipment, supplies and resources that enable them to deliver quality health services.
		Provide working conditions that enhance stability, productivity and satisfaction (fair pay level/remuneration, career progression, workplace safety, supportive supervision, etc.).
		In countries with emergencies and conflict, develop policies and strategies to address the gap in numbers resulting from outflow/distress of health workers as well as to allow departing health workers to rapidly integrate into labour markets upon their return.
	1.3. Regulate and manage exits from the health labour market	Develop/enforce policies to regulate various types of exits of health workers (retirement, temporary/permanent, planned/unplanned leave) in public services to ensure sustainable workforce.
		Design and implement measures to optimize retention of health workers in the national health labour market through monitoring and analysis of international mobility of health workers.
2. Strengthen capacities for health workforce governance and regulation	2.1. Strengthen capacity of health workforce structures at all levels	Strengthen the capacity of health workforce structures at national and subnational levels, notably health workforce units or directorates in ministries of health, with adequate responsibility for health workforce policies and plans, authority, accountability, capacity and resources (financial and staffing).
		Introduce interventions to ensure capacities of all relevant stakeholders (e.g. relevant departments of other ministries, professional councils/associations, academic institutions, etc.) to engage effectively in health workforce development and management.
		Establish/strengthen mechanisms for stakeholder coordination, partnership and policy dialogue, such as health workforce committees or stakeholder boards.
	2.2. Establish and strengthen the regulation of health workforce practice and education to ensure quality response to population needs, public protection and patient safety	Establish/strengthen regulation of health workforce practice through appropriate institutional arrangements, entry to practice competencies and standards, codes of ethics, registration, licensing and relicensing mechanisms, and a patient and provider notification system.
		Develop independent accreditation mechanisms to assess, maintain and improve the social relevance and quality of education programmes and institutions.
3. Mobilize and align investment in the health workforce to ensure implementation of strategic plans to meet current and future health workforce needs	3.1. Identify resources and requirements for health workforce production, recruitment and deployment and decent working conditions that are in line with the national health workforce strategic plans and labour market	Estimate the cost of health workforce plans to identify resources requirements to produce, recruit and retain health workers.
		Establish effective coordination with ministries of finance to improve fiscal space for the health workforce.
		Mobilize and secure adequate funding for health workforce strategic plans from different local sources, including both public and private, as well as donor support, as relevant.
	3.2. Mobilize and secure adequate funding for improving the production and employment capacity for, and quality of, health professionals	Increase financial resources for improving the capacity and quality of health professionals education institutions.
		Invest in the creation of jobs to ensure recruitment of trained health workers in accordance with the needs of the population.
		Invest in improving incentives and working conditions of health workers to enhance retention and performance.
		Ensure emergency response funds to mobilize surge capacity and cover emerging gaps in the health workforce
4. Strengthen the health workforce information base for designing, implementing and monitoring health workforce strategic plans	4.1. Establish/strengthen health workforce databases, information and evidence	Agree on common sets of health workforce indicators required for planning, decision-making and monitoring the implementation of health workforce strategies and interventions.
		Strengthen health workforce databases and information to meet data requirements for health workforce planning and monitoring through enhancing standardization and interoperability of health workforce data from different sources with improved reliability.
		Invest in improving the registries of the national regulatory bodies to maintain reliable and updated information.
		Improve the comprehensiveness and accuracy of the health workforce databases in the ministry of health.
	4.2. Ensure mechanisms to collect, report, analyse and use reliable workforce data such as establishing/ strengthening a national health workforce observatory	Establish/strengthen mechanisms, such as health workforce observatories, to ensure coordination among stakeholders for interoperability and sharing data.
		Strengthen capacities to operate, maintain and improve health workforce data/information, including analytical capacities by involving academic and research institutions.
		Develop capacities for and perform labour market analysis to improve the understanding and monitoring of the labour market dynamics and their implications on health workforce strategies.

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