



Review Article

Developmental Challenges in Public Health and Nursing Education Faced by Saudi Arabia: A Systematic Review

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Abstract

Background: More than six decades ago, public health and nursing care in Saudi Arabia (SA) have improved steadily. However, SA is still experiencing several new and challenging risks in public health and nursing education. **Objectives:** To review SA's developmental challenges in public health and nursing education. **Design:** Systematic review of 22 selected articles. **Setting:** The review was searched between March and June of 2018 in Riyadh, SA. **Materials and Methods:** The search was conducted using CINAHL Plus, Google Scholar, ISI Web of Science, Science Direct and Wiley Online Library for articles published between 1954 and 2018. **Results:** The challenges include practices in Hajj gatherings that undermined the health of pilgrims; low PHC research outputs; limited opportunities, lack of formal trainings, and shortage of PH workers including nurses; and increased use of emergency departments. Others are regarding older adults' health concerns and PH professionals' lack of knowledge on aging. Some challenges are concerned about substantial variation in the quality of PHC services and inadequate PHC facilities; epidemiological transition and response to the health needs of rising population; and also, lack of accreditation for private institutions. Challenges relevant to nursing include difficulties achieve "Gold Standard" in Saudi nursing practice; slow increase in the number of Saudi nurses; absence of Saudi nurses' association; lack of evidence-based nursing research; no nurse theorists yet within Saudi culture, and hardships in public health nursing teaching and training objectives. **Conclusions:** Saudi Arabia is currently struggling to resolve the prevailing challenges. The importance of introducing public health to the nursing profession is underlined. SA's nursing profession is in need of urgent reform. Public health education has been recommended for Saudi nurses to provide good quality healthcare to the kingdom's growing population.

Keywords: Nursing; Public health care; Public health education; Public health nursing education; Saudi Arabia

Introduction

Like any developing country in the world, Saudi Arabia has witnessed the impact of improvement of its health status and health indicators through public health interventions [1]. Current public health programs like environmental sanitation, immunization and health education with good formulation of sound health policies and health care delivery systems have significant impact on Saudi's public health. The basic law of Saudi citizen rights states that the government should provide healthcare services to every citizen and is responsible for public health of the kingdom [1,2]. The government has spent a lot on health mainly on curative aspects. In 2017, about 58.8 billion riyals was budgeted for the establishment of hundreds of public health centers and hospitals all over the kingdom. This resulted huge improvements in its health indicators and good achievement in the health of its citizens [2,3].

With the burgeoning health care system in Saudi Arabia and the expansion of the nursing schools, a critical need exists for nurses who are ready to partner in the shared responsibility of the prevention movement and to assume a leadership role. The nursing workforce is central to the performance of any health system. In Saudi Arabia, very little is known about its size, composition, skills, training needs, current functions and performance, expectations, or how it can be empowered to

support priority health problems in the country. There is pressure to recognize nurses as an important and visible component of the health care movement [4].

Modernizing nursing careers to fit the public health profession requires emphasizing public health education and the associated competencies. Public health competencies, particularly those related to chronic illnesses will be of great importance to the 21st century global health care force. The Ministry of Health (MOH) in Saudi Arabia has repeatedly underlined the importance of nursing education and still faces the challenge of delivering public health education and training in nursing curricular development [2,5-6]. The review aims to highlight the importance of public health nursing in overcoming the challenges associated with epidemiological transitions and the health needs of the rising population, describe the development of the nursing profession in Saudi Arabia, and recommend public health teaching and training objectives for the nursing profession. This is a call for educational and training programs in public health in general and public health nursing in particular to create "tomorrow's nurse", a professional that is responsible for protecting and promoting the health of individual patients, their dependents, and the Saudi public.

Public health in Saudi Arabia

The kingdom adopted the new concept of Primary Health Care (PHC) developed in 1978 and in 1983 began to promote it as the basis of its health care delivery system. This strategic step has been most fruitful with the immunization of over 90% of the children against infectious childhood diseases through the expanded program on immunization [7]. Big health expenditures and curative services are not the only reason for these major improvements in health. Clearly, the country is not an exception from the rest of the world because public health programs had also great impact on health of population.

A critical analysis was conducted related to infant mortality rates over the last 65 years in the kingdom. The analysis was tied to the economic boom in the country and the social changes that took place in the living situations all over the country. A subsequent result from 204 deaths per thousand births in 1950 to 12 in 2015 speaks of a real effect of public health programs such as vaccination programs, better environmental sanitation and female education [3,8].

Moreover, life expectancy has increased dramatically for year 2012 (73.8 years) that exceeds the regional average by 5.8 years and the global average by 3.8 years. Nonetheless, crude birth rate (per 1,000 population) in the kingdom (22.5) is lower than both the regional (31.4) and global (24.3) averages [1,9]. However, the annual growth rate (3.2%) of the population in the kingdom exacerbates the demands that are placed on its healthcare system [10].

The continuous presence of hereditary and infectious health problems in certain areas in the country (malaria in the south, Dengue fever in the west and hereditary blood diseases in the east and south), has been compounded by the emergence of new acute and chronic infections (such as avian influenza, rift valley fever and resistant types of tuberculosis). Additionally, such morbidities as diabetes mellitus (type II), hypertension, cardiovascular diseases, road traffic accidents among adult males (16 to 36 years old), and various types of cancers resulting from sedentary unhealthy life-styles are reaching alarming rates [1,11-14]. Furthermore, Saudi Arabia is expected to face new challenges with the continuing demand for health care for special groups such as the handicapped, geriatric population and the increasing number of pilgrims visiting the Islamic holy places in the country. To cope with all these challenges simultaneously a reform of the health system is necessary [15].

Recently, the MOH decided to change the look towards public health by creating a separate "Ministerial Agency of public health" headed by a vice minister under which two sub-agencies are included, namely, primary health care and preventive health. Clearly from this move, the specialty was recognized under the preventive and curative moods only. Therefore, it is now the time that this specialty be well recognized and served in order to make the great impact on the people's health in the kingdom. Saudi health system should consider an independent body for public health specialty away from the domination of the ministry of health in order to work as a guardian for the health of the public [1].

McNabb et al. [16] published a commentary special issue in educating dedicated and talented Saudi public health

leaders in the United States who are returning to KSA. They were well equipped in providing innovation and leadership for addressing the major causes of illness and death in the kingdom. The establishment of career paths for public health professionals, board certification for public health programs, streamlining the process between Ministry of Civil Service and MOH so that students can travel earlier back to USA and increasing involvement in the selection and screening of candidates were recommended to support King Abdullah Fellows (30 students graduated, 28 students enrolled in 2015) studying Master of Public Health degrees in USA.

Nursing in Saudi Arabia

To understand its strength and weaknesses and be able to make recommendations for public health education in the nursing profession in Saudi Arabia, it is important to consider the origin of its role. The history of the kingdom's nursing and public health can be traced back to Rufaida Al-Asalmiya, the first Muslim nurse [17]. In addition to being the founder of the first school of nursing in the Islamic world, Rufaida advocated for preventive care and delivered health-related teachings to the community [18]. In the last century, the first contribution to nursing is credited to Mrs. Lutfia al Khateeb, who obtained her diploma from Cairo in 1941 and has dedicated her life to enhancing the health education of Saudi women. Samira Islam was also a nursing advocate, a pharmacology professor, and, like Lutfia and Rufaida, made a remarkable contribution to nursing advancement within the framework of Islamic values [17,19].

Although Saudi Arabia has achieved tremendous accomplishments as a nation, the country's health care system continues to experience a nursing shortage. The enrollment in baccalaureate nursing is minimal. Most of the nurses are Americans, Filipinos, Indians, Egyptians, and other nationalities. The first formal training for nurses in Saudi Arabia was initiated in 1958 as a collaborative effort between the Ministry of Health (MOH) and the World Health Organization [5,19]. Shortly after, the health care system in Saudi Arabia began to develop rapidly in response to the changing health care needs of a population that arose from the adoption of an increasingly affluent lifestyle [6]. In 1996, Saudi nurses comprised 9% of the total nursing work force, and by 1999, 17% of the total work force was comprised of Saudi nationals. The rise in Saudi nursing graduates increased the percentage of nurses to 18% in 2003 [18]. The Saudi healthcare system has long been dependent on expatriate nurses that form a large proportion of the nursing workforce. Recently, Saudis still comprise only 29.1% of the total nursing workforce [2].

In Saudi Arabia, the profession of nursing has progressed in the usual practices and branches of clinical and specialized nursing but has omitted the public health facet. Public health nurses must form the majority of the nursing workforce and be the foundation that will maintain the power and play a major role in the nursing profession [20]. It is important to consider the education of nurses for this job. In this review, the interest in public health is emphasized, and reforms of the nurse's role are suggested. We suggest that public health nursing should be integrated and sustained in the

Saudi Arabian health care system in addition to other nursing roles, such as the hospital nurse and the specialized nurse. Recommendations are made concerning the public health competencies for the Saudi public health nurse, as well as the integration of public health in nursing education and training [4].

The nursing profession has traditionally had a good reputation in Islam. It was mentioned for the first time during the time of Prophet Muhammad (peace be upon him) when it served the Muslim armies during periods of war [21]. However, despite its long existence in the Saudi community and its respected history in Islam, nursing today is not viewed positively in Saudi culture. The government's efforts to attract and retain more Saudis in the nursing profession encounter obstacles such as unappealing working conditions, limited options for balancing work and family responsibilities, and the perception of the role of nursing and the poor image attached to it. The main reasons for not choosing nursing as a profession among Saudi women are to do with cultural values, family disagreement, gender desegregation, the low image of nursing and the night shift [22]. It is, thus, not generally viewed as a suitable profession for women [10].

Nursing has been represented at the MOH since 1987; however, it was only in 1994 that the MOH established the General Directorate of Nursing. This started to improve the quality of nursing by gathering data about the nursing situation, communicating with nurses in outlying areas, and empowering nursing staff by assigning nursing representation in all 20 health regions. Until today, SA faces a shortage of nurses - the ratio of nurses to patients, 36 nurses per 10,000 population [23], compares unfavorably with, for example, Bahrain [58/10,000], Japan [95/10,000], Canada [100/10,000], and the UK [101/10,000] [24]. During the second Gulf War in 1990, many expatriate nurses left the country without notice. This resulted in a staffing crisis that made the policy of "Saudization" a priority. However, Saudization of the profession will take a long time as currently Saudi nationals comprise just 34% of the nursing workforce [10].

The nursing system in SA relies a great deal on expatriate nurses, recruited from over 52 countries. Differences in religion, culture, social values and language can create barriers between expatriate nurses and local patients [22]. Expatriate nurses are typically women who come to Saudi for financial, professional or personal reasons (including Muslims hoping to perform the Haj). Typically, they are offered with a single contract, most of them are, thus, unaccompanied by partner or family. Contracts cannot exceed 1 year and there is no guarantee of renewal. Furthermore, whenever a qualified Saudi nurse is available the contract can be ended without any compensation. Nurses from western countries tend to be treated more favorably than nurses from elsewhere in terms of payment and privileges. This kind of employment treatment causes some nurses to move to developed countries, such as the USA, Canada and the UK, to find a more congenial working environment [6].

Nursing education in KSA

Initially, nursing training began in 1954 with a 1-year program. The first Bachelor of Science in Nursing (BSN) was

established in 1976. Such courses were limited to women; it was only in 2004 that a BSN program for men was established [25]. Nursing education in Saudi Arabia goes back to 1958 when the first formal education for nurses was initiated. The start was a collaborative effort between the Ministry of Health (MOH) and the World Health Organization [5,19,26]. For many years, the MOH's Health Institutes sponsored formal education for nurses at 2 levels. The first level was post intermediate school nursing institutes graduating diploma nurses after 3 academic years. The second level was postsecondary school nursing colleges graduating diploma nurses. However, the second level was considered as a higher level of diploma holders than nurse aids because of its more comprehensive nursing content [4,26]. In a trial, to overcome the difficulties and criticism of the organization of these 2 levels of programs conducted in non-traditional academic organizations, the nursing colleges and institutes moved to become under the Ministry of Higher Education [MOHE] [6,23]. This movement resulted in closing the institutes and maintaining the colleges under universities. However, universities were not well prepared to take over such colleges and many academicians perceived such colleges as lacking proper academic structure and organization. To make the best use of such movement, universities benefited from budgets allocated without really paying much attention to the development of these new comers and their projected outcomes. Under the new arrangement, nursing colleges lost the MOH control and support, and could not gain the deserved support and attention of the academic universities due to the initial gap in planning a solid infrastructure to adopt such programs.

In 1977, the university baccalaureate nursing programs consisted of nursing studies for 4 academic years and a 1-year internship was offered by King Abdulaziz University and King Saud University under the jurisdiction of MOHE until present. Since then, Saudi nursing shortage began to meet Saudization program in all areas and fields of nursing including public health nursing [26]. Furthermore, the MOH has upgraded its Health Institutes to the "Colleges of Health Sciences", and by 2008, all educational organizations under the MOH were transferred to the Ministry of Health Education (MOHE) to improve the quality of nursing education [23]. Despite these efforts to improve nursing education in Saudi Arabia and the history that includes the role of pioneers [17]. Nurses in the country still lack a consensus on their role within the wider context of social and health care domains. More recently, new Saudi universities have offered male and female BSN courses. However, nursing courses in SA tend to have low levels of enrolment due to the poor image of nursing compared with other professions [27].

In 2010, the MOH recommended that a Baccalaureate of nursing is the minimum degree required for professionalism and the entry level to practice [28]. However, the MOH, which is striving to improve the nursing profession, has developed an upgraded bridging program for diploma students for the purpose of improving the professional quality of Saudi nurses entering the labor market. Approximately 23,000 Saudi nursing graduates were identified as candidates for the bridging program [29]. Currently, Masters' programs in nursing are offered to both male and female Saudis.

International scholarships are also offered by governmental organizations to enable Saudi nurse leaders and educators to study abroad at Bachelor, Master and PhD levels [10].

Current public health nursing education in the kingdom

According to the American Public Health Association [30], public health nursing (PHN) is “the practice of promoting and protecting the health of populations using knowledge from nursing, social, and public health sciences”. By setting new priorities and goals, this evolving practice of nursing originates from discussions about what is most needed in Saudi Arabia in term of health care services, who the vulnerable populations are, and how they can be reached. The public health nurse is expected to play an extended role that encompasses community care, support, surveillance, education, and research [31-32]. The development of this role is occurring in response to the rising challenges of chronic illnesses, the aging population, the increase in disabilities, the threat of emerging infectious diseases, and the efforts to address the socioeconomic and cultural determinants of health in order to have the greatest impact on health [32].

The Saudi public health nurse may become competent in addressing the determinants of health and illness that are salient to a culturally distinct group. As a public health professional, the nurse may plan ecological interventions to change the context to promote better health, such as sanitation and safe schools, and may have the capacity to implement protective interventions, such as immunizations and screening [31-32]. The Saudi public health nurse may advocate, build coalitions, collaborate, and organize communities of stakeholders to support health programs [32].

It is expected that this culturally competent nurse will act as a consultant and will counsel, investigate diseases, teach, develop policies, screen, conduct social marketing campaigns, and evaluate situations through ongoing surveillance [31,32]. These actions will have the greatest population impact and will require a high level of education and training. With adequate education, the Saudi public health nurse can practice nursing more effectively by applying critical appraisal skills in decision making, even in clinical settings where uncertainties are encountered. Epidemiological sciences will merge with clinical skills to form what is called “clinical epidemiology” and eventually produce a better understanding

of the history of disease and disease progression, resulting in improved prevention and allocation of resources [32].

Materials and Methods

The research was conducted between March and June 2018. The literature review strategy was carried out and determined public health and nursing education in Saudi Arabia. Specifically, the following keywords were used: public health, community health, public health education, public health care, community health nursing, community health nursing education, public health nursing, public health nursing education, primary health care, primary health care centers, and primary health center. The review included in the analysis the qualitative, quantitative, and mixed method studies as well as review articles. Also, it conducted this investigation to cover a 65-year period (1954–2018) to obtain more publications. Moreover, this study only included publications in English, original-scientific research and full-text articles with abstract.

Results

The literature search established that a substantial number of studies addressed the challenges faced in public health care and public health nursing education in Saudi Arabia. A total of 750 studies were identified by means of database searching. After settling duplications, 625 references were removed, such as articles from non-health-care disciplines; magazine and newspaper articles; articles in neither the Arabic nor English languages; and articles outside the search period. Owing to the aims of the study, 95 studies were further removed, and an additional 8 studies were excluded because no abstract was available. Finally, a total of 22 studies were included in the study that included 13 studies (Table 1) identifying public/primary health care and public health education, 3 studies (Table 2) addressing public/primary health care and nursing profession, and 6 studies (Table 3) relating to nursing education and public health nursing education. These studies used different methods: five quantitative, two qualitative, one special communication, one commentary report, and thirteen reviews or systematic reviews.

Study title, year and author(s)	Objectives	Design	Results/Findings
Mass gatherings and public health: Case studies from the Hajj to Mecca (2017) Authors: Rahman J, Thu M, Arshad N & Van der Putten M	To identify the gap between preparation and training taken before being exposed to the mass gathering and post-exposure experiences, and the breach between the expectations and reality of the holy place	Qualitative study with in-depth retrospective interviews	Weakness in implementation and enforcement of law was identified for both the custodian country and countries of origin of Hajjis. Dissatisfaction and discontentment was pointed out by the study participants regarding the management among Hajjis from developing countries. Discrepancy was found planned and actual implementation strategies related to enhancing security and safety, and arrangement of relevant annual conferences and capacity building initiatives.
Primary health care research in Saudi Arabia: A quantitative	The objective of this study was to analyze the published primary health	Quantitative review analysis	From 1983 to 2011, a total of 655 PHC research articles were found. The publication output showed an increase with time. Original research articles (85.6%)

analysis (2017) Auhitors: Jahan S & Al-Saigul AM	care (PHC) research conducted in Saudi Arabia quantitatively and to determine the distribution of these research publications according to the topic, time, geographical location, and institution		were the main type of publications, and the most common study design was cross-sectional (93.4%). “Chronic diseases” and “health services research” were the main topics addressed. Riyadh province had the highest proportion (46.3%) of publications, and the universities (56.2%), followed by the Saudi Ministry of Health (24.9%), were the main institutions publishing the research.
Public health education in Saudi Arabia: Needs and challenges (2016) Authors: Mahmoud MA, Al-Zalabani AH & Abdulrahman KAB	Not specified	Commentary paper	The importance of public health (PH) and the need for competent PH workforce were highlighted due to the recent outbreak of a novel Middle-East respiratory syndrome - corona virus (MERS-CoV). In line with this, the Saudi MOH created a position for Deputy Minister for Public Health and changed the name of ‘Directorate of Primary Healthcare Centers’ to ‘Directorate of Public Health.’ The main challenges were the development of an appropriate PH curriculum, attracting the most qualified academic staff, appropriate training spots for practical placement, the enrolment of highly motivated students, the development of research priorities for PH to satisfy the needs of PH programs and agencies and lastly, the establishment of a quality assurance program to ensure the quality of PH education programs.
Frequent use of emergency departments in Saudi public hospitals: Implications for primary health care services (2015) Authors: Alghanim SA & Alomar BA	To determine the prevalence, factors and reasons associated with the frequent use of public emergency departments (EDs) in Riyadh, Saudi Arabia	Descriptive cross-sectional design with bivariate and multivariate analyses	Out of the 666 participants, 31.8% of them were considered as ‘frequent users’ of the emergency departments (EDs) in public hospitals and other health care facilities in Saudi Arabia. These ‘frequent users’ were males, older patients, living closer to EDs, with chronic illnesses or were hospitalized in the past year. The results implied and suggested that the current primary health care facilities’ services might not be responsive to the needs of the Saudi public. Thus, health care decision makers in the kingdom should facilitate primary health centers with necessary resources that fulfill patients’ health needs and reduce the burden on EDs.
Evaluation of health care services provide for older adults in primary health care centers and its internal environment (2015) Authors: Alhamdan AA, Alshammari SA, Al-Amoud MM, et al.	To evaluate the health care services provided for older adults by primary health care centers (PHCCs) in Riyadh, Kingdom of Saudi Arabia (KSA), and the ease of use of these centers by older adults	Descriptive cross-sectional design	Counseling on improving lifestyle, and basic health assessments on blood pressure, diabetes, and blood cholesterol were provided. However, less than half of the 103 primary health care centers (PHCCs) around the city of Riyadh offered annual comprehensive screening for common age-related conditions, with no screening for cancer, with no standard protocol for counseling, and with poor coverage of common vaccinations. Lack of Braille signage was found, nevertheless the layout of most PHCCs and other signage was good. Other issues of access to PHCCs were particularly concerned among older adults like lack of public transport, limited parking opportunities, the presence of steps, ramps, and internal stairs, and lack of handrails.
Public health in the Saudi health system: A search for new guardian (2014) Authors: Milaat WA	Not specified	Review	Primary Health Care is the basis of the Kingdom of Saudi Arabia’s health care delivery system. However, it was noted that health plans and expenditure in the health system were concerning on the curative aspects and there was a significant weaknesses in public health structure, such as public health specialists, public health inspectors and public health officers. In this study, a significant improvement has been witnessed by Saudi Arabia in its health indicators when it spent generously on the curative health services and established hundreds of hospitals and primary health

			care centers. In addition, public health services have also had significant impact on people's health. The improvement was due to a combination of public health programs such as environmental sanitation, immunization and health education with good formulation of sound health policies and health care delivery systems. Lastly, Ministry of Public Health would work to confirm that all issues relative to health of the public in every aspect of daily life in the kingdom were within the genuine interest of all policy makers.
Systematic review of quality of care in Saudi Arabia (2014) Authors: Almutairi KM & Moussa M	To explore the current structure of the Saudi health care system, and assess the quality of health care in the Kingdom of Saudi Arabia (KSA) based on the indicators provided by the Institute of Medicine (IOM), and to provide recommendations for improvements	Systematic review	The quality of healthcare in KSA has progressed significantly over the recent years at all levels of health services. Like many countries, KSA is investing money and efforts to improve quality of healthcare in the Kingdom. Although significant progress has been made, barriers affecting this quality are still apparent as the general population increases, patients' health care needs, and demands are also rising. Factors affecting the quality of healthcare can be categorized into patient factors (such as health literacy, access to care, and culture), and providers' factors (including medical care, workload, culture, and job satisfaction).
Private and public healthcare in Saudi Arabia: future challenges (2014) Author: Yusuf N	Not specified	Review	The public health department became responsible for free healthcare for citizens. The private healthcare sector is growing quickly. In Saudi Arabia, people are increasingly relying on private health care organizations to manage their healthcare needs. This trend will persist because of the essentials that drive demand, such as increased life expectancy, population growth, and patients' need for treatment. Therefore, the private sector in Saudi Arabia offers attractive incentives to investors from commercial and social perspectives. The government is the dominant force in the healthcare sector. The increasing population and health expenditures are forcing the government to enact considerable changes in the healthcare system. The private sector offers healthcare services in a number of cities and large towns. The key players in private sector healthcare in Saudi Arabia are the Almanac Healthcare Group, the Saudi German Hospital Group, and the Al-Hammadi Hospital.
The changing face of healthcare in Saudi Arabia (2008) Auhtors: Walston S, Al-Harbi Y & Al-Omar B	Not specified	Special communication	Many countries now struggle to provide cost-effective, quality healthcare services to their citizens. Saudi Arabia has experienced high costs along with concerns about quality of care in its public facilities. To address these issues the country is currently restructuring their healthcare system to privatize public hospitals and introduce insurance coverage for both foreign workers and citizens. The changes provide an interesting and insightful case for the challenges in radically changing a country's healthcare system. The situation also demonstrates a unique case in the Middle East for greater reliance of the private sector to address rapidly escalating healthcare costs and deteriorating quality. The complexity of changing a healthcare system is discussed with the many challenges associated with the change.
Quality of primary health care in Saudi Arabia: a comprehensive review (2005) Auhtors: AL-Ahmadi H & Roland M	This study presents an overview of quality of primary care in Saudi Arabia, and identifies factors impeding the achievement of quality, with the aim of determining how quality	Systematic review	Of the 128 studies initially identified, 31 met the inclusion criteria for the review. Studies identified were diverse in methodology and focus. Components of quality were reviewed in terms of access and effectiveness of both clinical and interpersonal care. Good access and effective care were reported for certain services including: immunization, maternal health care, and control of epidemic diseases. Poor

	of Saudi primary care could be improved.		access and effectiveness were reported for chronic disease management programs, prescribing patterns, health education, referral patterns, and some aspects of interpersonal care including those caused by language barriers. Several factors were identified as determining whether high-quality care was delivered. These included management and organizational factors, implementation of evidence-based practice, professional development, use of referrals to secondary care, and organizational culture.
Health care services in Saudi Arabia: Past, present and future (2001) Authors: Sebai ZA, Milaat WA & Al-Zulaibani AA	Not specified	Review	Over the past two decades since 2001, health care services were available to all parts of Saudi Arabia. The Saudi Ministry of Health (MOH) provided 60% of the health services in the kingdom with 13 health directorates through 182 hospitals and 1751 PHCCs with 14,407 doctors, 36,101 nursing staff and 19,743 technicians, 20% by other government agencies and the remaining 20% by the private sector. Lastly, the health system of the kingdom faced four future interrelated challenges: management and financing of health services, balance between curative and preventive services, training and development of Saudi health care manpower, and health development plans by implementing a comprehensive primary health care program.
A study of health centers in Saudi Arabia (1996) Authors: Mansour AA & Al-Osimy M	This article presents the findings from an evaluation of three of the largest maternal-child health centers dispensing primary health care (PHC) in Riyadh, Saudi Arabia.	Descriptive quantitative survey	The study evaluated the resources available in three large health centers in the city of Riyadh, Kingdom of Saudi Arabia. Findings reflected discrepancy between those obtained from centers' evaluation and those derived from the satisfaction portion. In particular, consumers were generally satisfied though manpower, equipment and facilities in the three centers were reported as inadequate.
Evaluation of primary health care in Riyadh, Saudi Arabia (1994) Author: Al-Osimy MH	The aim of this study is to assess PHC in Riyadh in terms of structure and outcome.	Descriptive quantitative survey	Three public health centers (PHC) in Riyadh, KSA were assessed in terms of structure and outcome processes. Results showed that PHC's human resources did not measure up to the ideal standards particularly in center C, clinical support areas were under-equipped in center A and C, and facilities in the three centers were inadequate. Majority of the participants were satisfied with the services of the three centers.

Table 1: Articles related to public/primary health care and public health education.

Study title, year and author(s)	Objectives	Design	Results/Findings
Health professionals' knowledge and attitudes toward older people in primary care in Saudi Arabia (2017) Auhors: Alamri BH & Xiao LD	This article reports on the findings of a literature review in relation to attitudes toward older people among health professionals working in primary healthcare centers in Saudi Arabia.	Narrative review	The findings of this narrative literature are reported through 5 themes: The instruments used in the selected studies to measure attitudes toward older people; the instruments used to measure knowledge on ageing; attitudes toward older people; knowledge of the care of older people; and factors that influence knowledge and attitudes toward older people. Further investigation is needed to identify the level of knowledge on ageing, attitudes toward older people, and the factors which affect health professionals' knowledge and attitudes toward older people in primary healthcare centers (PHCs) in Saudi Arabia.
Health care and nursing in Saudi Arabia (2008) Authors: Aldossary A, While A & Barriball L	This paper reviews healthcare provision in Saudi Arabia and the development of nursing together with its current challenges.	Review	The study reviewed the health care provision in Saudi Arabia which developed fast with multiple government and independent service providers. In addition, it also reviewed the development of nursing together with its current challenges of increasing proportion of its nursing workforce because much nursing care in the

			kingdom is being delivered by expatriate nurses. It concluded that there was a need to increase the proportion of Saudi nurses so that culturally appropriate holistic care is delivered. Without shared Saudi culture and language, it would be hard to deliver effective health education within nursing care to Saudis.
Primary health care in Saudi Arabia: applying global aspects of health for all, locally (2000) Authors: Littlewood J & Yousuf S	This paper describes the application of primary health care principles in the Islamic Kingdom of Saudi Arabia.	Not specified	The study described the application of primary health care principles in the Islamic Kingdom of Saudi Arabia which used Qur'an as an overwhelming framework within which the tenets of primary health care were explored. This was seen to be crucial in addressing the International Council of Nurses' and World Health Organization's views on contextualizing nursing for the greatest benefit of the population. Lastly, the study was of particular relevance in Saudi Arabia where research carried out in the community by women was novel, and at the time the study was conducted there were no nurse theorists from within Saudi culture.

Table 2: Articles related to public/primary health care and nursing.

Study title, year and author(s)	Objectives	Design	Results/Findings
Strategies to address the nursing shortage in Saudi Arabia (2016) Author: Aboshaiqah A	To investigate the nursing shortage in Saudi Arabia and specifically the shortage of Saudi nurses in the healthcare workforce and to propose solutions	Review	Saudi Arabia depends largely on an expatriate workforce, and this applies to nursing. Saudi Arabia is experiencing a nursing shortage in common with most countries in the world and a shortage of Saudi nationals, especially women, in the healthcare workforce. The world shortage of nursing is extrinsic to Saudi, but intrinsic factors include a poor image of the nursing profession in the country that is exacerbated by cultural factors. With the call for the Saudization of the workforce to replace the imported workforce by Saudi nationals, including nurses, through the 1992 Royal Decree, Saudi Arabia faces a problem in attracting and retaining Saudi nationals in the nursing workforce. Solutions are suggested that are aimed at improving the public image of nursing through education and the use of the media and improvements in the workplace by addressing working processes such as teamwork, ensuring adequate staffing levels and addressing some aspects of culture which may make working in nursing more compatible with being a Saudi national.
Transforming the nursing profession in Saudi Arabia (2015) Authors: Alghamdi M & Urden LD	To discuss the impact of healthcare policies and regulations on hospitals' journey towards the Magnet designation in Saudi Arabia	Review	The presence of two Magnet-designated hospitals in Saudi Arabia (not affiliated with the Ministry of Health) is an opportunity to explore how this has been achieved within the organizational and professional context. The nursing leaders in the Ministry of Health could be accountable to address the barriers in advancing nursing practice and to raise nursing awareness regarding the adoption of a new culture of excellence. Nursing managers in the Ministry of Health hospitals are encouraged to assess the hospitals' readiness to apply for Magnet status. Their readiness must include having a high level of nursing satisfaction and low turnover rate, which goes along with assessing cultural and organizational climates to understand the gaps in work environment and driving evidence of readiness toward achieving Magnet status. Health-care policies and regulations, both nationally and globally, can result in several challenges to achieving 'the Gold Standard' in nursing practice. These challenges may not be possible to resolve within an organizational level. Collaborative effort and transformational changes are needed to drive the nursing profession toward the best

			outcomes for our patients and nurses.
An overview of nursing in Saudi Arabia (2014) Authors: AlYami MS & Watson R	Not specified	Short review article	Achieving and maintaining a stable nursing workforce is an important issue for the well-being of the rapidly growing population of Saudi Arabia. However, high turnover of expatriate staff and low recruitment of Saudi nationals have led to a serious staff shortage in the professions, particularly of well-qualified and experienced nurses. Nursing leaders need to work to improve the image of nurses and facilitate the recruitment of women into the nursing profession. Reduced working hours and part-time contracts with increased salaries and benefits could attract more young women to the profession, as might the provision of facilities such as private transportation and on-site childcare. Furthermore, establishing a national association for nurses would advance the nursing profession and help to ensure that all nurses undertake fully comprehensive training before entering the workforce.
Public health nursing education in Saudi Arabia (2013) Authors: Jradi H, Zaidan A & Al Shehri AM	To highlight the importance of public health nursing in overcoming the challenges associated with epidemiological transitions and responding to the health needs of rising populations, describe the development of the nursing profession in Saudi Arabia, and recommend public health teaching and training objectives for nursing education	Review	Nursing profession in Saudi Arabia requires integration of public health education and its related competencies in the nursing curriculum. The study highlighted the importance of public health nursing in overcoming the challenges associated with epidemiological transitions and responding to the health needs of rising populations, described the development of nursing profession in the kingdom, and recommended public health teaching and training objectives for nursing education.
The nursing profession in Saudi Arabia: an overview (2011) Authors: Almalki M, FitzGerald G & Clark M	To provide an overview of the nursing profession in Saudi Arabia, including its history, educational development, workforce and professional practice	Review	Saudi Arabia is faced with a chronic shortage of Saudi nurses, accompanied by high rates of turnover. Expatriate form a large proportion of the nursing workforce in Saudi healthcare facilities, with Saudis comprising only 29.1% of the total nursing workforce. Despite the fact that the proportion of Saudi nurses is very low in general, this rate is lower in the private sector where local nurses comprise only 4.1% of the total. The status of nursing in Saudi Arabia should be enhanced in order to make it a worthwhile career. The media should engage in helping to promote a positive image of the nursing profession. The education sector should reconsider the length of nursing training (5 years compared with 3 years in many developed countries) while maintaining competent and safe practice. Reducing financial burden on the nursing student through provision of additional financial support would encourage more students. In particular, nurses should be paid a full salary during the intern year as currently occurs with medical students.
Professional development of nursing in Saudi Arabia (2001) Author: Tumulty G	To describe the development of nursing in Saudi Arabia and to recommend further directions for development of professional nursing in that country	Needs assessment through interviews, direct observation and review of existing documents	A comprehensive needs assessment was performed in 1996 by an onsite consultant to: (a) evaluate the existing nursing system at the ministry, regional, and hospital levels, (b) describe the functional interrelationships of a nursing division within the Ministry of Health, and (c) prepare a work plan outlining the program elements that a nursing division could address to foster high-quality health care in the public sector. The data showed a young country and an equally young nursing profession struggling to meet the

			needs of a growing population. The highest priority for the advancement of nursing in Saudi Arabia is the creation of a kingdom-wide system of nurse regulation. Pressing needs include regulation of professional standards, licensure of all nurses practicing in the Kingdom, accreditation of educational programs, and formation of a national nurses association.
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Table 3: Articles related to nursing, nursing education and public health nursing education.

Discussion

Out from 22 articles systematically selected in this review, challenges in public health and nursing faced by the Kingdom of Saudi Arabia were identified. More than six decades ago, the public health and nursing care in Saudi Arabia have improved steadily with time. Along with these improvements, many new and challenging risks in public health and nursing arose. Such problems with regard to public health and nursing education are also evident worldwide like in Turkey [33] and United States [34]. Although Saudi Arabia has taken health development efforts, health status of its population in terms of measurable indicators are still not reaching successful state. This is due to the inherent inadequacies in the traditional health care approach [35].

These challenges include practices in Hajj gatherings that undermined the health of pilgrims [36]; low research outputs in PHC [37,38]; limited opportunities, lack of formal trainings [18,38] and shortage in number and distribution of PH workers including nurses [18,38-39]; and increased use of emergency departments [13] Among others are regarding older adults' main health concerns that include obesity, type-2 Diabetes Mellitus and its complications, cardiovascular diseases, cancer, cognitive decline and bone health [40-41] and lack of knowledge of PH professionals about physical and social aspects on aging [42].

Some challenges are concerning about substantial variation in the quality of PHC services, and inadequate PHC facilities and clinical support areas [18,43-44]; epidemiological transition and response to the health needs of rising population [5,23]; and also, lack of accreditation for private institutions [10]

On the other hand, many challenges are linked to nursing which include difficulties to improve the profession [23] and achieve the "Gold Standard" in Saudi nursing practice [45]. Additional challenges consist of slow increase in the number of Saudi nurses [6,39]; a need for a national association of Saudi nurses and lack of evidence-based nursing research [10], no nurse theorists yet within Saudi culture [46], and hardships in including public health teaching and training objectives for nursing education [23].

With consideration to the challenges presented above, it is anticipated that implementation of the roles of PH workforce with emphasis to PH nurse will maximize the use of the educated Saudi nursing workforce to meet the current and future needs of Saudi populations, communities, families, and individuals. Nurses with a good educational emphasis and understanding of their role in the health and social context of the Saudi population may have an impact on planning future healthcare services. The well-educated public health nurse

will ensure that all delivered interventions benefit all patients with no gaps in delivery and will make a difference for the entire population [32,47]. Hence, public health nurses may fill the gap in the public health needs of the population in an efficient and effective way. Delivering public health-specific undergraduate nursing education in Saudi Arabia requires a robust curricular structure that will prepare the nurse to meet public health competencies as they relate to the management of chronic illnesses and the importance of the global health care workforce in the 21st century [4].

The health and safety of the Saudi Arabian population and surrounding countries are projected to be an important part of the curriculum, and practical learning opportunities must allow the students to perform the following: (1) conduct a needs assessment in relation to the available services; (2) identify the genetic, environmental, and social determinants of diseases and prevention; and (3) be competent in promoting health and preventing diseases, including screening and evaluation. The public health syllabus in nursing education must cover the sciences and disciplines that underpin public health for this particular population and provide benefits to clinical nursing practice and the Saudi population [4].

The public health curriculum in nursing schools in Saudi Arabia aims to include all the sciences and disciplines including epidemiology, disease prevention and control, health behavior, health promotion, health from an Islamic perspective, health disparities (with focus on gender inequality), critical appraisal skills and research methodology, literature searching skills for evidence-based practice both regionally and globally. In addition, the public health nursing curriculum includes communicable and non-communicable disease control, medical statistics, health economics, medical sociology, occupational health, environmental health, global public health, and sociology and psychology while being mindful of the human rights aspect, religious restrictions, and ethical issues [4]. In comparison, the skills that are favorable for the future of advance practice in public health nursing education in the United States include community assessment/program planning, epidemiology, prevention, health services, informatics, health policy/law/ethics, research and grant writing [48].

Equality and a united view of "health for all" are core values in public health [3]. It is evident that no single person can deliver the entire range of health services for all people [35]. In the same way, there is no single list of educational objectives that may apply to all nursing colleges in the country, as educational contexts and environments differ. However, a proposed basic set of public health educational goals for the nurse may be applied flexibly and contribute to what is expected from the Saudi public health nurse. It included that the public health nurse should be able to: (1)

discuss the population determinants of health and disease, (2) apply principles and practices of health promotion, (3) use epidemiology and data handling for the practice of evidence-based public health nursing, (4) apply communicable and non-communicable disease prevention and control strategies, (5) implement needs assessment, health care planning, and evaluation, (6) describe the Saudi health care system and scope of available services, and (7) help and cope with research activities. The nursing student with a public health education should be able to understand the disciplines that underpin public health education in order to benefit the population and improve its health [4].

Awareness of the determinants of health in Saudi Arabia, the history associated with the country and its religious and social structures, and the changing current environment will all enable the public health nurse to manage and overcome obstacles during their working careers. Like in the United States, consideration of the roots in early discourse about public health nursing education must consist of the social determinants of health [34]. There are lessons to be learned from the past and inevitable changes to be faced in the future. The delivery of public health education for nursing may become a challenge for the nursing and public health academic departments as the 'what', 'how', and 'why' of such education must become a priority on the national public health agenda [4].

Education and practice guidelines require resources [4]. Ensuring that public health education and training for nurses is well funded and tailored to local needs is an obligation of the academic educator and the decision-makers in nursing institutions. This task is a difficult one that should take into consideration the different models for public health education for nurses throughout the world, as benefits can be gained from learning from the experience of others. In addition, it is beneficial to know the costs and benefits of such models and to understand their appraisal. Similarly, like the United States [34], Saudi Arabia must endeavor a public health movement that is changing and dynamic to address both newly emerging and longstanding challenges identified elsewhere in this review. Therefore, with these challenges, nursing schools' curriculum must be revised at a countrywide level to revive and strengthen public health and nursing education in Saudi Arabia.

Conclusions

Saudi Arabia is currently struggling to resolve the challenges identified in public health and nursing education. The importance of introducing public health to the nursing profession is underlined to better meet the health needs of its growing population. Its nursing profession is in need of urgent reform to ensure that there are adequate well-trained nurses to provide good quality health care to the kingdom's growing population including older adults.

The Saudi Ministry of Health has repeatedly underlined the importance of nursing education and the need to adopt a public health educational curriculum to better meet the health needs of the population. For the nurse, merging individual and population care is a way of highlighting the importance of public health in clinical practice and in shaping society's view

about public health. Public health education has been recommended for nursing students in order to prepare the Saudi nurses to take a lead in social responsibility and to fulfill the need to understand the causes of the health determinants of the population of Saudi Arabia.

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Conflict of Interest

No conflict of interest has been declared by the authors.

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