ABSTRACT

Doctoral programmes in nursing have a long history in the US where traditional research based PhDs and more clinically based doctoral programmes are common. In the rest of the world PhDs are better accepted though professional doctorates with a thesis component are common in the UK. In countries with newly established or planned doctoral programmes in nursing the research PhD seems the degree of choice. Here we discuss developments in Jordan, Saudi Arabia and Ghana.

This study used official documents, strategic plans, curriculum developments and other documentary evidence from Saudi Arabia, Jordan and Ghana. We compared doctoral programmes and development with other countries by reference to the literature.

We offer the example of public health and non-communicable diseases in particular as one area where doctorally trained nurses applying international standards in collaboration internationally may be of benefit.

BACKGROUND

History of nursing in the Arab World

Arab women in early Islam have a long history in first aid and nursing care. These early nurses were named as "Alaseyat or Alawasy" meaning the ones who empathize with the patients. Aisha Bint Abebaker "mother of the believers" the prophet Mohammad's wife had set an example for Muslim women by participating in nursing patients in the battlefield. Rufaidah bint Sa'ad is widely recognized to be the founder of the nursing profession in the Islamic world. She was born in Yathrib around 620 (Jan, 1996). Rufaidah learned medical care by assisting her father who was a physician. Like Florence Nightingale and Mary Seacole, who both worked in war zones, she set up a field hospital tent and led groups of volunteer nurses who participated in treating the battles' casualties.

Rufaidah's contribution was not confined to nursing the injured. She took the roles of both a public health nurse and a social worker. She participated in solving social problems in the community, provided assistance to people in need especially the poor, orphans and the handicapped. She was given a medallion by the prophet in recognition of her work. Rufaidah is considered a nurse role model for Arab and Muslim nurses.

The influence of Arab women nurses continued beyond the Arabian Peninsula to modern day Iraq and Andalusia. These early Arab nurses were famous for splinting broken bones, providing physical and spiritual care for people at the end of life, while also providing midwifery services. As such nursing was an accepted profession in the Islamic world from its beginning. Indeed, practicing nurses were women who had a good reputation, holding a high position in society.

Given the long history of nursing in the Arab/Islamic world it is unsurprising that today Arab countries want to offer nursing programmes at all levels. While the first PhD programmes in nursing in Egypt were established in the 1980s doctorates have

been unavailable until recently in many other Arab countries. But this is changing and here we discuss the options for doctoral study that have been considered by two Arab countries (Saudi Arabia and Jordan), and a comparison with the country of Ghana, and the resulting chosen pathways.

METHODS

We have an existing network comprising former doctoral students from Jordan, Saudi Arabia, Ghana (all now in faculty positions) and their former supervisors in the UK. Thus we used this network since we had ready access to official documents and policies of those countries. The study is a mixture of a review of such official documents and papers located from a review of the literature. This is not a systematic review as we were not looking for evidence of the effectiveness of treatments (say) or prevalence of a condition. Rather we wanted to explore the development of nursing from apprenticeship training to doctoral level studies with examples from one country where there has been recent developments to a PhD programme (Jordan) and two (Kingdom of Saudi Arabia and Ghana) where there are planned PhD programmes. In addition we used papers concerned with doctoral study internationally that informed our discussion more widely.

We also examined the three countries' choice of programmes and in particular their reluctance to consider professional doctorates or doctorates in nursing practice, preferring the traditional PhD route. The paper provides a useful insight into cultural attitudes towards nursing and nurse education in the considered countries (Kingdom of Saudi Arabia, Jordan, and Ghana) and how these have impacted on the development of PhD programmes such that nurses from the countries under consideration have historically needed to study overseas to advance their qualifications and practice. In recent times financial and social considerations have led to in-country development of doctoral programmes.

RESULTS OF REVIEW

Doctoral programmes

PhD programmes for nurses have been in place in the US since 1924 when the Teachers College at Columbia gave an EdD (Doctor of Education) specifically designed for nurse educators (Beckstead, 2010). New York University offered the first nursing PhD in 1934 (Beckstead, 2010) though in the following 25 years only two more doctoral programmes were created (Ketefian et al., 2001) and it was not until the 1970s that such programmes proliferated in the USA (Carter, 2013). By 2005 there were doctoral programmes in at least 31 countries (Ketefian et al., 2005). After the US (93 programmes) in descending order were the UK (52), Australia (15), Korea (12), Canada (11), South Africa (10) with fewer than 10 in the remaining countries (Skaalvik et al., 2005). By 2014 the worldwide number of PhD programmes had increased to 339 (Kim et al., 2015), an increase of 24% in less than a decade. The UK had Increased to to 70 (35% increase in nine years), the US 125 (34% increase) (Kim et al., 2015) with Japan being exceptional having one programme in

1966, nine in 2005, 73 in 2013 and 82 the following year, 2014 (Japanese Nursing Association, 2016).

Nursing doctoral students are unusual, though not unique, sharing many features with social work and allied health. Compared with “traditional” academic subjects such as pure sciences, mathematics and the humanities where students enter typically aged 21, nursing students’ average age in the US on entry is 42. Doctoral students are often part time and 21% took more than 5 years to graduate. Finally most (60%) of doctoral students in the US were already faculty members and while they are developing their careers and adding potentially to the supervisor pool they are not increasing the faculty staff numbers (Fang et al., 2016).

Doctoral studies normally involve a major research element. These include PhDs and professional doctorates, the latter for nursing having various names such as DHSci (Doctor of Health Science), DNS or DNSc (Doctor of Nursing Science), DSN (Doctor of Science of Nursing), though in the US most programmes are named either PhD (Doctor of Philosophy) or Doctorate in Nursing Practice (DNP) (Minnick et al., 2010). The DNP is a practice higher degree found in the US which has no thesis component. Other countries do not offer it. For example Australia has a requirement that doctoral degrees contain a 70% research component, which means a practice based doctoral degree would not be able to cover the necessary clinical material, thus Australia has no plans to change their current higher degree structures to convert Masters degrees in practice to DNPs (Scanlon, 2015). Similarly in Europe doctoral degrees need to show the thesis is of peer-review publishable quality (Organisation for PhD Education in Biomedicine and Health Sciences in the European System, 2015). In the US in 2018 there were 130 PhD and 275 DNP programmes in nursing schools (American Association of Colleges of Nursing, 2018). Even in the US the rise of the DNP causes concern that the DNP reduces the number of nurses prepared to undertake independent research (Beckstead, 2010).

There are other routes such as PhD by publication or by portfolio (both available in some universities in the UK) but these are relatively uncommon and not available in most countries although they are research based programmes.

Generic and faculty specific research training

The methods employed in a doctorate are those that many students may use. For example, all students will need to conduct a literature review. This is complex and requires knowledge of the various subject specific databases. Conducting a literature review at doctoral level requires an understanding of critical evaluation of studies located and how to come to an overall view or synthesis of the studies. Thus even in research doctorates generic training is required.

In the UK the descriptors for doctoral study are given by the QAA The first descriptor states a doctorate needs to demonstrate ”*the creation and interpretation of new knowledge, through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of the discipline, and merit publication*” (The Quality Assurance Agency for Higher Education, 2014 ,p30). This and later descriptors are of no surprise to graduate schools or supervisors of doctoral study.

But the last item a student should demonstrate is "*the qualities and transferable skills necessary for employment requiring the exercise of personal responsibility and largely autonomous initiative in complex and unpredictable situations, in professional or equivalent environments"* (The Quality Assurance Agency for Higher Education, 2014 ,p30). It is this that necessitates generic training.

Professional doctorates have shorter theses with fewer credits awarded, whereas traditional PhDs incorporate a longer thesis with often the whole amount of credits awarded to the thesis. But the distinction between a PhD with typically no requirement to pass coursework nor any credit given and a professional doctorate (where the student typically cannot progress to thesis until coursework has passed – and gained credit) is increasingly narrow.

The recognition that generic training is needed to give students greater employability, and not necessarily in academe, has made many graduate schools offer generic and subject specific modules to all doctoral students. Modules are generic for the university or specific to the school or programme. Modules such as *Writing for publication* may be university-wide as all students need to demonstrate the ability to write at the required level. Whereas a module such as *Ethics applications for health* may be a module for a school of health as the ethics applications are typically more exacting in this area than, for example, in engineering. *Advanced quantitative methods for health* might be a faculty based module, which may be optional and not necessary to pass for a traditional PhD student but compulsory and requiring a pass in a professional doctorate. Thus if a student believes a professional doctorate is an easier route to a doctorate they are very much mistaken as they are in fact as demanding as the more traditional PhD route. Professional doctorates do however, suit students who want to study part-time, conduct research in their workplace, have a more clinical, educational or management interest and prefer a more structured course. PhDs are best suited for full time students who want to gain deep specialised knowledge in a technical area such as epidemiology and have the self-discipline to plan and conduct their work to finish in a timely fashion.

Examination of doctorates

Many countries (US, New Zealand and the UK for example) have a viva voce or oral examination where the student defends their thesis with at least two academics (normally at least one external to the university). Public defense of the thesis with external examiners is typical in many countries, for example Italy, Sweden and Spain. Variants of oral examination, common in Germany (for example Freiberg (Technische Univeresitat Bergakademie, 2019)), Austria and the Czech Republic (for example Prague (Metropolitan University Prague, 2019)), include the rigorosum (an oral examination with external examiners and chair of the examination committee in attendance) and disputation which is a defense made in public. In France one presents to a thesis jury composed of 3-8 external and internal examiners. In contrast the Netherlands requires a very formal examination; the "ceremonial thesis defence" (van Bakel, 2013) where the student is required to wear full academic dress and use formal specific titles and terms of address – a doctoral committee of at least

three academics assesses the thesis. In some countries (Australia for example) there is typically no oral examination and the thesis is instead marked by two or more external examiners who provide a written report on the thesis.

Kingdom of Saudi Arabia

In the 20th century Lutfia al Khateeb, who gained her diploma from Cairo in 1941, was a pioneer in nursing for the Saudi people (Jradi et al., 2013). The first formal training for nurses in Saudi Arabia was a one year programme in 1954 (AlYami and Watson, 2014) though Jradi stated the first formal programme was in 1958 which was a collaboration between the Ministry of Health and the United Nations (Jradi et al., 2013), presumably more substantial than the one year course. All hospital based apprentice style nurse education (which was the standard and only form of nurse training initially) was under the aegis of the Ministry of Health. This was similar therefore to other countries such as the UK where apprentice style training run by hospitals was standard. The first Batchelor of Science in Nursing (BSN) was said to be established in 1978 (though we believe King Saud University commenced the first programme in 1976), initially for women only, though a male programme started in 2004 (AlYami and Watson, 2014). Thus contemporary nurse education has been in place in Saudi Arabia for over sixty years. Degree level nurse education has been available for over forty years and masters level for over thirty years.

The Kingdom of Saudi Arabia was and is highly dependent on expatriate nurses, but while the Saudi nurses comprised 9% of the workforce in 1996 (and many expatriate nurses left in the 1990 second Gulf war (AlYami and Watson, 2014)), by 2003 it was nearly double (17%) by 1999 and by 2011 it was 29% and by 2014 was 34% (AlYami and Watson, 2014) or 37% based on Ministry of Health figures in the same year (Alharbi et al., 2019). While rising, the numbers of Saudi nurses remains small and to address this various proposals were put forward, for example (1) the status of nursing should be enhanced with the media promoting a positive image of the nursing profession (2) the length of nursing training should be reduced from five to three years and (3) financial support should be offered to students with nurses paid a full salary during the intern year (Almalki et al., 2011). In 2004 high school students exhibited very low scores on the intention to study nursing and it was advised Saudi health decision makers should be more positive on the skills in nursing and the need to increase respect for the profession (Al-Omar, 2004). In 2014 it was still reported that nursing was held in poor regard by Saudis and additional problems included shift work and poor work-life balance (AlYami and Watson, 2014). This is despite Islamic clerics in the Kingdom listing nursing as one of the recommended professions for women more than a decade before (Vidyasagar and Rea, 2004). To make matters worse Saudi health organisations are poor at retention with “alarming rates of nurse turnover” (Falatah and Salem, 2018 p 630) and leadership and management cited as relevant factors in both turnover and intention to quit. Healthcare is one of the main foci of the Saudi Vision 2030 and plans are in place improve nursing education (Harb, 2018).

King Saud University commenced a Master of Science in Nursing (MSN) in 1988 However, in 2014 it was reported that masters programmes in nursing were only available to women, though international scholarships allowed nurse educators and

leaders to study abroad for BSN, masters and doctoral programmes (AlYami and Watson, 2014). King Saud University now offers a male students' masters course in nursing. A particular problem in Saudi Arabia is a lack of definition of advanced nursing practice. Accreditation of nursing courses is by the Saudi Commission for Health Specialties, but they designate nursing in line with education, whether the nurse has a diploma, degree or higher degree. Possession of a PhD makes the nurse a "nurse consultant" whether or not that individual has advanced clinical skills (Hibbert et al., 2017). Since nurse specialists or nurse consultants who gained their status abroad are often not allowed to practice at that level they tend to leave the country. However there is a need for advanced clinical nursing roles, for example for sickle cell anaemia. Such posts can save money, for example in the UK a rheumatology specialist nurse reduced admissions, physician time and money (about £300,000 per annum) (Hibbert et al., 2017). Until advanced nursing practice is recognised in the Kingdom of Saudi Arabia, nurses seeking promotion will opt for management or education rather than a senior clinical post – or leave for another country where advanced nursing qualifications are recognised.

Graduates of masters' programmes wishing to pursue doctoral studies needed to go outside the Kingdom. However "a shortage of Saudi PhD prepared nursing school faculty and a limited number of advanced degree programs in Saudi Arabia, are preventing the education of enough nurses to meet growing healthcare demands and the preparation of nurses for faculty roles" (Alshehry, 2016). There was no evidence that there was any difference between men and women in motivation to study for a PhD, nor was length of time in practice relevant. But support from family members, work colleagues and fellow students were important and for women institutional barriers were more important (Alshehry, 2016 p vi). One such constraint is the need for women to be accompanied by her husband or male relative if they wish to study abroad (Alosaimi, 2019), though rules are being relaxed in Saudi Arabia – for example women are now allowed to drive and further reforms are expected.

Thus a doctoral programme based in Saudi Arabia was needed. But in many colleges of nursing there are no doctorally trained faculty and even where they exist they often have no supervisory experience (clearly – given there were no programmes, unless they gained this experience abroad). In order to commence doctoral training with limited supervision experience of its doctorally trained nurse academics (all with doctorates obtained abroad) a PhD programme has been designed at King Saud University that uses joint supervision with international colleagues with supervision experience (Alosaimi, 2019). This programme took its first students in 2019. Applicants need to have published a paper in a peer-review journal. The programme consists of both taught modules (some compulsory, some optional), an examination and a thesis.

Kingdom of Jordan

In Jordan a lack of doctorally trained faculty made setting up programmes challenging. Untill the mid-1950s nursing was not seen as a respectable profession for women (Zahran, 2011) and to counter this perception the Jordanian Nursing

Council launched “Nursing is a model of honour” under the patronage of HRH Princess Muna (Zahran, 2011 p383).

In 1953 a ministry of health school of nursing was opened, and in 1962 the Princess Muna College of Nursing was opened and university education for nures commenced in the University of Jordan in 1972 (Zahran, 2011). Masters programmes only commenced in 1986 with faculty being Jordanians with masters or PhDs from foreign universities (Nabolsi et al., 2014). The cost and difficulty for Jordanians with family commitments made locally run programmes attractive (Nabolsi et al., 2014) and in 2005 the first PhD nursing programme started at the University of Jordan (Zahran, 2011). In the UK similar constraints of doctorally prepared faculty were dealt with post 1992 (when nursing studies were all transferred to universities) by nurses taking PhDs in related areas (e.g. education, social science) supervised by non-nurses. However some non-nursing supervisors reported they were not well prepared to supervise qualitative studies (Kim et al., 2010) though there is a trend even in medicine towards more qualitative work. Capacity now is much higher in the UK and most, if not all UK schools of nursing offer doctoral programmes. Jordan also used faculty from other disciplines to supplement supervision (Nabolsi et al., 2014), while in the UK nursing faculty routinely co-supervise doctoral students in other subjects (e.g. criminology, allied health). Jordan furthermore recruited international nursing faculty from the US, UK, and Sweden. The Jordanian national programme allowed all qualified nursing faculty in Jordan to supervise and teach on the programme, to address an acknowledged lack of faculty specialisation, though problems remain in matching student interest to faculty expertise (Nabolsi et al., 2014). Jordan employs the same curriculum as PhD programmes in universities in other countries including the US and UK.

The Jordanian Nursing Council are committed to nursing research and note in parallel with the increase in faculty and graduate students since 2005 there has been a huge increase in published nursing research from Jordan from one paper in the 1980s, to 25 in the 1990s, 62 in the five years 2000-4, 113 in 2005-8 and 251 in 2009-12 (Dawani, 2014).

Ghana

For a brief history of nursing in Ghana see Donkor and Andrews (Donkor and Andrews, 2011). Prior to independence in 1957, Ghana followed the nursing curriculum set down by the General Nursing Council of England and Wales. Post-independence Ghana formed the Ghana Registered Nursing Association to keep a register of nurses, and as in the UK training focused on hospital based curative health. Ghana then had to radically reduce health staff due to an economic crisis (Donkor and Andrews, 2011). But this resulted in inadequate health staffing and the Ministry of Health in Ghana recommended in the Human Resources for Health 2007-2011 document that there be strategic expansions of health worker training including postgraduate training for doctors, pharmacists, nurses and midwives (Asamani et al., 2019). Numbers dramatically improved through this policy change from 1.07 health workers (doctors, nurses and midwives) per 1000 population in 2005 to 2.65 per

1000 in 2017 (Asamani et al., 2019). However this very increase led to concerns over the quality of nurses since newly qualified nurses were being promoted to nurse managers when they might lack the relevant experience (Asamani et al., 2019). Thus in Ghana it is clear there is a desire to retain the most qualified and senior nurses. For while Ghana is a major produce of nurses in Sub Saharan Africa, there remain workforce shortages (Asamani et al., 2019).

The problems of countries like Ghana have in the past been related to communicable disease and vaccine-preventative diseases. Malaria continue to be a burden both in terms of health and the economy (Donkor and Andrews, 2011). Non-communicable disease is now the leading cause of death in the world. There are three main risk factors – tobacco use, poor diet and lack of physical exercise, relevant for four main non communicable diseases – some cancers, chronic respiratory disease, diabetes and cardiovascular disease. Such diseases accounted for over 65.5% of deaths in 2010, with more than 80% of these occurring in low and middle-income countries (World Health Organization, 2015). Health concerns are increasingly similar across the globe and collaborative initiatives are essential (Donkor and Andrews, 2011). Joint programmes of doctoral studies are one example where collaboration may be useful, especially to initiate programmes in counties with few potential supervisors. An example of such a programme is the graduate education in nursing between the University of Alberta and University of Ghana (Donkor and Andrews, 2011).

Ghana is committed to increase health workers at all levels including baccalaureate degree trained nurses (Bell et al., 2013). There is also a need to increase doctorally trained nurses as WHO recommend heads of nursing programmes should hold graduate degrees and nursing programmes in Ghana require a doctoral degree for heads of programmes. An insufficient number of such candidates has resulted in physicians heading nursing programmes in some cases (Bell et al., 2013).

In Ghana doctoral students do course work in the first year which entails written and oral examination. In the second year experiential learning is undertaken that could include (say) clinical work, teaching or project work under supervision. Final examination is by thesis and viva voce. Examiners are normally one internal (not a supervisor) and two external academics and all examiners would normally hold doctorates themselves (though experts in the field may examine without a doctorate). At the viva the university community and family and friends are able to be present to witness the event.

Ghana has since 2015 run bi-annual doctoral schools (subsidized by grants from the Carnegie Corporation) for participants from Niger, Nigeria, Senegal, Togo, Uganda, South Africa as well as Ghana itself (PADA, 2020).

Despite this history in Ghana no university offered a PhD or DNP in nursing, though MPhil and MSc programmes were available. Faculty members with PhDs were educated in Europe, the US, South Africa and Asia. However, some nurses gained PhDs in other departments in Ghanaian Universities. For instance, in the University of Ghana nurse academics hold PhDs in public health, health administration and psychology.

Nursing doctoral candidates in Ghana tend to prefer programmes in South Africa as opposed to Europe or the US as programmes are less expensive given the unfavourable exchange rate between Ghana and these countries compared to South Africa (Canada is preferred over the US as programmes there are cheaper).

Cost is not the only factor as some PhDs in South Africa are flexible with part-time programmes for faculty members who plan to further their education while continuing to work. In addition travel from Ghana to South Africa is less expensive than to the UK for example, as is accommodation and food. The University of Ghana School of Nursing and Midwifery is planning a PhD programme, which is expected to start in the 2020/21 academic year, having successfully gained national accreditation. It will be based on existing PhD provision in Ghana.

CONCLUSION

Jordan has one PhD programme running, Saudi Arabia has started one and Ghana is expected to commence one in 2020. These are not merely created as a matter of prestige but financial and social aspects are relevant as it is cost-effective to prepare doctoral students locally and allows families to stay together. Women, especially women with children, find it especially difficult to study abroad as it either entails moving or leaving their family. Women in countries such as Saudi Arabia face additional constraints due to social and cultural norms.

Neither Arab country nor Ghana has shown interest in the professional doctorate, despite it containing a thesis element. This may be explicable by the fact that PhD and the various professional doctorates have such similar components that the distinction between them is marginal – the main difference being that PhDs are entirely focused on the thesis (but with generic and faculty specific taught modules) and the professional doctorate while weighted towards the thesis accumulates credit for the taught modules. There appears to be little interest in Saudi Arabia, Jordan or Ghana in the DNP programmes. This in part can be explained by the lack in Saudi Arabia of a definition of advanced nursing practice though there is a similar lack of interest in countries other than in the US. In all three countries the traditional PhD is the sole programme for doctoral students. Masters programmes may offer the best route for clinicians wanting advanced practice status though in Saudi Arabia this needs to be defined before programmes can be said to offer such status.

In general the enthusiasm for DNP programmes is limited to the US. Professional doctorates are available in many countries including the UK but are not available or likely to be available in the three countries considered in this paper.

The need for collaboration in nursing studies across the globe is increasingly apparent as the conditions become more and more similar. An example noted above is non-communicable disease. Diabetes is now at epidemic level in Saudi Arabia with a tenfold increase over the last thirty years (Robert and Al Dawish, 2020). Diabetes is now common among adult Ghanaians (Asamoah-Boaheng et al., 2019) and the rate of obesity in Jordan is high and increasing and associated with an increase in diabetes (Ajlouni et al., 2020). Public health is a difficult area in which to conduct studies and trials of interventions need large samples. This is precisely the

area where international collaborative studies are needed, such as done recently in China, Mexico and India (Anthony et al., 2015) and these call for appropriately trained researchers including nursing researchers at doctoral level.

Finally, as Asamani et al (2019) note, patients are much safer under the care of nurses and midwives who are more highly trained. Doctorally educated nurses are needed in clinical roles not just educational ones.

Reference list

Ajlouni, K., Khader, Y., Batieha, A., Jaddou, H., El-Khateeb, M., 2020. An alarmingly high and increasing prevalence of obesity in Jordan. Epidemiol Health, e2020040.
Al-Omar, B.A., 2004. Knowledge, attitudes and intention of high school students towards the nursing profession in Riyadh city, Saudi Arabia. Saudi medical journal 25, 150-155.
Alharbi, M., McKenna, L., Whittall, D., 2019. Social barriers experienced by female Saudi nursing students while studying nursing: A phenomenological study. Nurse education in practice 34, 123-129.
Almalki, M., FitzGerald, G., Clark, M., 2011. The nursing profession in Saudi Arabia: an overview. International nursing review 58, 304-311.
Alosaimi, D., 2019. PhD in Nursing at King Saud University King Saud University, Riyadh.
Alshehry, A., 2016. "Motivations and Barriers for Saudi Nurses to Pursue a Doctoral Degree" Doctoral Dissertations. 548. https://scholarworks.umass.edu/dissertations_2/548. University of Massachusetts Amherst.
AlYami, M., Watson, R., 2014. An overview of nursing in Saudi Arabia. Journal of health specialties 2, 10-12.
American Association of Colleges of Nursing, 2018.
Anthony, D., Dyson, P.A., Lv, J., Thankappan, K.R., Fernandez, M.T., Matthews, D.R., 2015. Reducing Health Risk Factors in Workplaces of Low and Middle-Income Countries. Public Health Nursing 32, 478-487.
Asamani, J.A., Amertil, N.P., Ismaila, H., Francis, A.A., Chebere, M.M., Nabyonga-Orem, J., 2019. Nurses and midwives demographic shift in Ghana-the policy implications of a looming crisis. Hum Resour Health 17, 32.
Asamoah-Boaheng, M., Sarfo-Kantanka, O., Tuffour, A.B., Eghan, B., Mbanya, J.C., 2019. Prevalence and risk factors for diabetes mellitus among adults in Ghana: a systematic review and meta-analysis. Int Health 11, 83-92.
Beckstead, J.W., 2010. DNP=PhD-light, or old wine in new bottles? International journal of nursing studies 47, 663-664.
Bell, S.A., Rominski, S., Bam, V., Donkor, E., Lori, J., 2013. Analysis of nursing education in Ghana: Priorities for scaling-up the nursing workforce. Nursing & health sciences 15, 244-249.
Carter, M., 2013. The evolution of doctoral education in nursing, in: DeNisco, S., Barker, A. (Eds.), Advanced Practice Nursing: Evolving Roles for the Transformation of the Profession. Jones and Bartlett Learning, Burlington,MA.
Dawani, H., 2014. Nursing evolvement in Jordan: looking back to guide the future, Nursing Leadership in Global Health Developing Pathways for Effective Advocacy and Action February 27-28 Vanderbilt University, Nashville, Tennessee.
Donkor, N.T., Andrews, L.D., 2011. 21st century nursing practice in Ghana: challenges and opportunities. International nursing review 58, 218-224.
Falatah, R., Salem, O.A., 2018. Nurse turnover in the Kingdom of Saudi Arabia: An integrative review. Journal of nursing management 26, 630-638.
Fang, D., Bednash, G., Arietti, R., 2016. Identifying barriers and facilitators to nurse faculty careers for PhD nursing students. Journal of Professional Nursing, Vol 32, No. 3 (May/June), 2016: pp 193–201 32, 193-201.
Harb, A., 2018. Current challenges facing nursing education in Saudi Arabia.46th Nursing Care, Neurology and Neuromuscular Diseases. J Current Res: Int Medicine 2018, Volume 3. DOI: 10.4172/2529-797X-C2-004, 46th World Congress on Nursing Care, Neurology and Neuromuscular Diseases October 22-23 2018, Madrid.

Hibbert, D., Aboshaiqah, A.E., Sienko, K.A., Forestell, D., Harb, A.W., Yousuf, S.A., Kelley, P.W., Brennan, P.F., Serrant, L., Leary, A., 2017. Advancing Nursing Practice: The Emergence of the Role of Advanced Practice Nurse in Saudi Arabia. Annals of Saudi medicine 37, 72-78.
Jan, R., 1996. Rufaida al-Asalmiya, the first Muslim nurse. Image--the journal of nursing scholarship 28, 267-268.
Japanese Nursing Association, 2016. Nursing in Japan, available from http://www.nurse.or.jp/jna/english/pdf/nursing-in-japan2016.pdf, Tokyo.
Jradi, H., Zaidan, A., Shehri, A.M., 2013. Public health nursing education in Saudi Arabia. Journal of infection and public health 6, 63-68.
Ketefian, S., Davidson, P., Daly, J., Chang, E., Srisuphan, W., 2005. Issues and challenges in international doctoral education in nursing. Nursing & health sciences 7, 150-156.
Ketefian, S., Neves, E., Gutierrez, M., 2001. Nursing doctoral education in the Americas. Online Journal of Issues in Nursing 6 available www.nursingworld.org//MainMenuCategories/ANAMarketplace/ANAPeriodicals/OJIN/TableofContents/Volume62001/No2May01/ArticlePreviousTopic/DoctoralEducationAmericas.aspx.
Kim, M.J., Lee, H., Kim, H.K., Ahn, Y.H., Kim, E., Yun, S.N., Lee, K.J., 2010. Quality of faculty, students, curriculum and resources for nursing doctoral education in Korea: a focus group study. International journal of nursing studies 47, 295-306.
Kim, M.J., Park, C.G., McKenna, H., Ketefian, S., Park, S.H., Klopper, H., Lee, H., Kunaviktikul, W., Gregg, M.F., Daly, J., Coetzee, S., Juntasopeepun, P., Murashima, S., Keeney, S., Khan, S., 2015. Quality of nursing doctoral education in seven countries: survey of faculty and students/graduates. Journal of advanced nursing 71, 1098-1109.
Metropolitan University Prague, 2019. All Rigorosum Proceedings, Prague.
Minnick, A.F., Norman, L.D., Donaghey, B., Fisher, L.W., McKirgan, I.M., 2010. Defining and describing capacity issues in US doctoral nursing research programs. Nursing outlook 58, 36-43.
Nabolsi, M., Abu-Moghli, F., Khalaf, J., 2014. Evaluating A New Doctoral Nursing Program: A Jordanian Case Study: Part of special issue:: 4th World Conference on Learning Teaching and Educational Leadership (WCLTA-2013). Procedia - Social and Behavioral Sciences 141, 210-220.
Organisation for PhD Education in Biomedicine and Health Sciences in the European System, 2015. Consensus document of the ORPHEUS PhD Candidates' Workshop Friday 11th - Saturday 12th September 2015, PhD Candidate's role within ORPHEUS: Current and future perspectives. Center for Molecular Medicine Cologne (CMMC) of the University of Cologne, Cologne.
PADA, 2020. Pan African Docoral Academy available on https://pada.ug.edu.gh/. University of Ghana, Accra.
Robert, A.A., Al Dawish, M.A., 2020. The Worrying Trend of Diabetes Mellitus in Saudi Arabia: An Urgent Call to Action. Curr Diabetes Rev 16, 204-210.
Scanlon, A., 2015. Doctor of Nursing Practice:: Australia. Clinical Scholars Review 8, 98-101.
Skaalvik, M.W., Davidson, P., Daly, J., Chang, E., Srisuphan, W., 2005. Issues and challenges in international doctoral education in nursing. Nursing and Health Sciences 7, 2294-2304.
Technische Univeresitat Bergakademie, 2019. Structured Doctoral Studies, Friberg.
The Quality Assurance Agency for Higher Education, 2014. UK Quality Code for Higher Education. QAA, Gloucester.
van Bakel, M., 2013. Defending your PhD thesis: the Dutch way.
Vidyasagar, G., Rea, D., 2004. Saudi women doctors: gender and careers within Wahhabic Islam and a "westernised" work culture. Women's Studies International Forum 27, 261-280.
World Health Organization, 2015. Non communicable diseaes progress monitor. WHO, Geneva.
Zahran, Z., 2011. Nurse education in Jordan: history and development. International nursing review 59, 380-386.