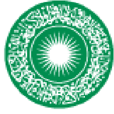

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Assessing the impact of a partnership-based work/study nursing upgrade programme in a low and middle-income setting

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Assessing the impact of a partnership-based work/study nursing upgrade programme in a low and middle-income setting

ABSTRACT

Aim: To evaluate the 15-years impact of the work-study nursing upgrading programme in East Africa.

Background: Working nurses in Africa are often primary family income earners, with limited ability to leave jobs and upgrade qualifications. In 2001, the university established a work-study upgrade programme for enrolled- and diploma-level nurses, allowing them to upgrade their qualifications while continuing to work and support families. Donor partnerships provided scholarships to further increase programme access.

Design: A mixed method design was used involving an online alumni survey and 24 interviews and 23 focus groups with 172 purposively selected representatives of nursing graduates, employers, regulatory bodies, professional associations, and senior nursing officials.

Method: Quantitative data were analysed using frequencies and percentages. Inductive thematic analysis was used for qualitative data. Equator guidelines informed reporting of both qualitative and quantitative results.

Results: In total, 2138 students graduated from 2001–2015; 53% (n=1141) at diploma-level and 47% (n=997) at degree-level. Of the 549 graduates that completed the survey, 81.2% (n=446) were female, 93.1% were currently employed and 98% worked within East Africa. They reported improved professional competence (69.4%), nursing practice (25.9%) and patient outcomes (4.6%) on graduation. Extracted themes included: flexible/accessible programme; friendly learning environment; effective teaching and learning strategies; acquisition of nursing knowledge, skills, and competencies; stakeholders' role in the programme; career/professional advancement; and strengthened health systems.

Conclusion: The work-study programme was an effective nursing workforce capacity development strategy. Programme access was strengthened via the supporting donor partnership. Positive outcomes were achieved in respect to the university's values of quality, access, relevance, and impact.

Relevance to clinical practice: Long-term sustainable development of nurses and midwives is fundamental to achieving Sustainable Development Goals. Work-study programmes and private-public partnerships are effective mechanisms to strength the development of nursing and the overall healthcare workforce in low resource settings.

Keywords: Education, Nursing, Graduates; Capacity Building; Models, Health Workforce

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INTRODUCTION

The global health workforce demand is expected to double to 80 million by 2030, but the supply is projected to be short by 15.6 million workers (Liu, Goryakin, Maeda, Bruckner, & Scheffler, 2017), including an estimated need-based shortage of 9 million nurses and midwives (World Health Organisation, 2016a). The World Health Organization estimated that a threshold of 4.45 health workers (physicians, nurses and midwives) per 1000 population must be reached to achieve universal health coverage (World Health Organisation, 2016c). Currently, East African countries fall short of this threshold, with an acute shortage of 147,000 nurses and midwives in Tanzania, and vacancy rates of 8.7% nurses and 30.9% midwives in Uganda (Uganda Bureau of Statistics, 2017). These countries are also grappling with an unequal distribution of the available nursing workforce (Munga & Maestad, 2009), outward migration (Brownie & Oywer, 2016) and inadequate/unmatched skill sets and competencies among nurses and midwives (Freund et al., 2015).

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Background

Historically, production of competent nurses and midwives in East Africa has been limited by lack of programme options and access issues (Mutea & Cullen, 2012; Rakuom, 2010). Working nurses face specific difficulties upgrading their qualifications while continuing to work and support families, with few available part-time study options (Rakuom, 2010). Most nurses cannot easily secure extended paid study leave or afford to resign from work to upgrade their nursing education. Therefore, consistent with the 54th World Health Assembly resolution 12 on strengthening nursing and midwifery, the university offered a work-study nursing upgrade programme for working nurses from 2001–2015. Specifically, this involved a 2-year (four semesters) enrolled nurse (EN) to registered nurse (RN) programme, and a 2.5-year (five semesters) RN to bachelor's degree (BScN) programme.

These flexible programmes involved class attendance of 2 days per week at one of three campuses across East Africa. The work-study programme was student-orientated and offered 24-hour access to digital learning resources (Brownie et al., 2016), enabling nurses to study while maintaining a full-time nursing role and the associated income. The average income for working nurses in East Africa is

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USD 250–1000 per month (PayScale; URN); therefore, nurses have little (if any) disposable income to cover fee payments and university-related costs. Donor partnerships were formed to overcome financial barriers to access (Rawlinson et al., 2014). Merit-based based partial and full scholarships were awarded annually to students based on their socioeconomic situations. Current and previous donor partnerships included Johnson & Johnson Corporate Citizen Trust, the German Development Bank, the Rotary Club and Lundin Foundation (Brownie et al., 2016).

Since inception, the work-study programme has contributed to training more than 2100 working nurses (Brownie et al., 2016); however, little was known regarding the long-term impact on the East African nursing workforce. Therefore, an evaluation to identify and describe the impact of the partnership-based intervention on the development of working nurses and midwives in East Africa was needed. This study aimed to evaluate the 15-year impact of the work-study nursing upgrading programme in East Africa. Following exploration of the impact, this evaluation forms the basis of the next phase of the university's partnership-based programme developments in East Africa.

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METHODS

Study design

A descriptive convergent mixed method approach was used. A cross-sectional online survey, along with qualitative focus group discussions (FGDs) and key informant interviews (KIIs) were used to conduct a summative 15-year impact evaluation of the work-study nursing upgrading programme in East Africa. The qualitative method complemented the results from the quantitative survey by providing first-hand in-depth insights of the impact of the programme, and increased triangulation and verification of the findings (Creswell, 2014).

Setting

This study was conducted Kenya, Uganda and Tanzania (both mainland Tanzania and the Zanzibar Archipelago). Kenya is a lower middle-income country with an estimated workforce of 4070 nurses with a BScN and 99,984 EN/RN (Kenya National Bureau of Statistics, 2017). Tanzania and Uganda

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are low-income countries; Tanzania has 19,821 EN/RN, and Uganda has 11,673 EN/RN (Uganda Nursing and Midwifery Council, 2015).

Sampling and participant selection

The online survey targeted programme graduates from 2001–2015. All graduates who could be contacted were eligible to participate and were sampled (Mwizerwa, Robb, Namukwaya, Namuguzi, & Brownie, 2017). FGD and KII participants were selected using a multistage purposive sampling to include the programme graduates (EN–RN (n=63) and post-RN–BScN (n=50)), and representatives of health facilities (n=17), nursing professional associations and regulatory bodies (n=15) and senior nursing officials (n=22) across East Africa (Table 1).

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Insert Table 1

Data collection

Quantitative data were collected between March and May 2016 using an online, structured self-administered questionnaire, which was used in earlier alumni surveys. The 13-page questionnaire had five sections with at least four non-alternating items per page, and took 10–15 minutes to complete. The questionnaire covered demographic information, education, training/employment, achievements, satisfaction with the university educational experience and connection with the university. Information about the survey and an online link to the survey were shared through email, alumni social media platforms and fellow alumni. Three email reminders were sent to alumni to increase the response rate (Aga Khan University, 2017). The use of additional techniques such as social media and provision of Internet access to increase the response rate for the online survey was necessitated by the limited Internet penetration, especially in Tanzania and Uganda (Mwizerwa et al., 2017).

Qualitative data collection included 24 KIIs and 23 FGDs. Data were collected in English by two trained interviewers between May and October 2016. One interviewer conducted the interviews/focus group while the other took notes. Each KII/FGD was audio-recorded, lasted 60–90 minutes, and was supported by an interview guide. The interview guide was developed to reflect the university's key values of access, quality, relevance and impact. Before the KIIs/FGDs, participants were contacted via

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phone or email, informed about the study and consensus was reached on the interview's location and time. The interviewer explained the purpose of the study to participants and obtained written informed consent before beginning the KIIs/FGDs.

Data analysis

Quantitative data analysis

Data were checked for completeness and consistency and analysed using Microsoft™ Excel 2013. Frequency tables and percentages were used to describe the sample characteristics, and academic and overall university experience. Reporting of quantitative results adhered to the guidelines for reporting Internet e-surveys (Eysenbach, 2004, 2012) and observational studies (Vandenbroucke et al., 2007).

Qualitative data analysis

Transcripts were transcribed verbatim, entered into NVivo qualitative analysis software version 11 (QSR International, Victoria, Australia), and an inductive thematic analysis was conducted (Braun & Clarke, 2006). First, an independent researcher listened to the interviews, read and reread the transcripts and field notes before coding them line by line while generating memos. Second, the initial codes generated were shared and discussed with members of the research team involved in data collection for verification and comparison. Third, the initial codes were sorted, grouped based on the message they portrayed and assigned appropriate labels. The next step involved merging sub-themes to generate themes and checking themes against each other to ensure they were grounded in the data. Seven themes were identified: flexible and accessible programme; friendly learning environment; effective teaching and learning strategies; acquisition of nursing knowledge, skills, and competencies; stakeholders' role in the programme; career and professional advancement; and strengthened health system. Conducting and reporting of the qualitative results adhered to the consolidated reporting guidelines for qualitative (Tong, Sainsbury, & Craig, 2007) and mixed methods research (Leech & Onwuegbuzie; Onwuegbuzie & Corrigan, 2014).

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Ethics

The University Research Ethics Committee (2016/REC–19(v1)) and the Uganda National Commission for Science, Technology, and Innovation (SS 4068) approved this study. Participation in the study was voluntary and only those who were interested were included. FGD and KII participants provided written informed consent. For survey participants, completion of the online survey was considered provision of consent. Data were protected according to the university's confidentiality of students' records and data protection policies.

Rigour

Trustworthiness of the study was established using various strategies. First, relevant data were collected among nursing stakeholders who were aware of or had interacted with the programme. Second, all FGDs/KIIs were audio-recorded for verification. Third, credibility was enhanced through triangulation by the use of FGDs and KIIs, diverse groups of participants in different countries and locations and diverse researchers for data collection and analysis. A trained team of interviewers conducted the FGDs/KIIs, guided by a pre-tested interview guide. An independent researcher (not involved in the planning and data collection) analysed the data, and afterwards discussed the codes and emerging ideas with the research team to reduce researcher bias. Lastly, the research team made efforts to analyse negative cases and highlight them in the reporting, perform debriefing sessions, promote peer scrutiny of data collection and analysis and used thick descriptions in explaining identified themes. The researchers also provided a detailed description of the context to allow for transferability of the findings.

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RESULTS

Quantitative results

In total, 2138 nurses (939 Kenyan, 606 Tanzanian and 593 Ugandan) graduated from the university between 2001 and 2015; 1095 with Diplomas in General Nursing, 997 post-RN–BScN, 36 with a Higher Diploma in Accident and Emergency Nursing and 10 with a Higher Diploma in Critical Care

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Nursing. Of these, 549 (25.7%) completed the survey; 81.2% (n=446) were female, 93.1% were currently employed and 98% worked within the East African region (83.4% in urban areas).

The majority of participants strongly agreed that the programme provided them with education and training that was relevant (86.6%), offered the right level of learning and challenges (72.9%), developed their interpersonal communication and relationship building abilities (76.4%), developed a greater sense of community service (58.1%), and developed self-esteem/self-confidence (80.6%) and leadership abilities (73%). Participants also reported improved professional competence (69.4%), nursing practice (25.9%) and patient outcomes (4.6%) on graduation. In addition, 76% of female respondents (91% Tanzanian, 72% Kenyan and 68% Ugandan) had qualifications two-levels above their mothers, indicating upward intergenerational education mobility (Table 2).

Insert Table 2

Regarding faculty and learning resources, most participants strongly agreed that the lecturers were experts in their respective fields and proficient in the subjects they taught (61.4%) and in imparting knowledge (69.1%). Two-thirds of participants (66.8%) strongly agreed that the university's information resources met or exceeded their expectations (Table 3). In terms of leadership, 60% of participants were managers, 9.8% in senior management positions and 21.1% were nurse educators or researchers. Within 2 years after graduation, 63% of participants had been promoted or received a pay rise (Table 2).

Insert Table 3

Qualitative results

There were 47 FGDs and KIIs; 21 in Kenya and 13 each in Tanzania and Uganda, involving a total of 172 nursing stakeholders (Table 1). Seven main themes were identified, each further classified based on sub-themes (Figure 1). These are discussed along with illustrative quotations tagged by participant and country.

Insert Figure 1

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Theme I: Flexible and accessible programme

The flexibility of the work-study programme allowed graduates to study and work at the same time, which helped them sustain their existing livelihood. This flexibility also allowed students who were unable to secure study leave from their employers to use their weekly days-off to attend classes.

> *'…for those who cannot be able to go for full time it is quite convenient because they are able to meet their life's objectives through such kind of arrangement, though it is difficult for them, but it is quite convenient and makes somebody move on with life and education at the same time'.* Professional Association (PA), Kenya (KE), FGD 18

Physical access to campus: Most participants were aware of the campus locations and reported having easy access. Students from Zanzibar were the exception, as there is currently no established campus, which required them to travel to mainland Tanzania for classes. Respondents from rural areas of Kenya and Tanzania also noted that the establishment of Kaloleni and Mtwara satellite campuses improved their access to the programme.

> *'From Mtwara, it was accessible because the distance was reduced. Instead of coming to Dar es Salaam, we could study in Mtwara'.* RN, Tanzania (TZ), FGD 11

However, some participants still noted challenges accessing the programme, especially those in more remote areas.

> *'…this work-study program is difficult for other people in other regions, that is why I was thinking if the sandwich programme will be introduced a person can travel for a one-month semester to study and go back, comes again to sit for the examination or there in between faculty visiting'.* PA, TZ, FGD 19

Financial access to the programme: Most participants noted that before enrolment, they were unaware that the university supported needy students. However, they were made aware through colleagues studying at the university. Most of the graduate participants noted that they were supported

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through the university scholarship. Some, especially from the satellite campuses, reported being accommodated and offered transport above the scholarship.

> *'…was too expensive for me because one thing I was not working and I could not raise that money, but when they came up with that 70% paid for me it became possible for me…'.* RN, KE, FGD 9

> *'You could afford to stay for one week, everything including accommodation catered for so there were fewer costs of living there, even if you commute monthly'.* RN, KE, FGD 8

Theme II: Friendly learning environment

Sufficient learning resources: The programme provided a conducive learning environment with good classes and other learning resources. Most requisite learning resources were available (e.g. books in the library, good Internet connectivity, enough learning spaces both in classes and library).

> *'…in the library, we had almost all the books we needed, I would say most if not all'.* RN, KE, FGD 10

However, some graduate participants from earlier classes/cohorts and rural sites noted that there were challenges with some resources, such as unreliable Internet connection, power and water.

> *'Initially we were able to access almost everything on the Internet, but it reached a point when the Internet was disconnected'.* RN, KE, FGD 9

Competent and supportive faculty: Most graduate participants noted that the university had a diverse internal and external faculty that was competent, experienced and able to provide diversity in knowledge and skill sets.

> *'[We] received lectures from external lecturers and even interaction with other students from other countries, which I think is an opportunity which you cannot find in other universities'.* RN, Uganda (UG), FGD 12

The faculty was supportive by being available to listen to students concerns, provide the requisite training materials and mentor students.

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'In general, we had experienced tutors who could be available anytime we needed them'. RN, KE, FGD 8

Theme III: Effective teaching and learning strategies

Blended learning: Participants highlighted that the university used a mix of learning approaches that included in-class teaching, self-paced digital learning and computer-supported communication and collaboration (including email and discussion forums).

'But we have e-learning, we have, self-directed learning, face to face interaction, all those are good…'. PA, KE, FGD 17

Course content: Graduates reported receiving the right amount of knowledge and skills, especially in comparison with their previous programmes and colleagues in similar programmes in other institutions. They noted that the programme was patient-oriented and student-based, allowing for the independence of students and helping to develop critically thinking nurses.

'The course content was good; it covered most of the areas where we had deficits...'. BScN, UG, FGD 6

'I find the content of the course that I received was very relevant to exactly what I am doing right now…'. RN, UG, FGD 12

'I would say all the courses they've been taught are relevant. If it is minute like the informatics, that is a bit new in the society it is very key because we realize that we are moving to a digital world and the faster our nurses become digital the better'. Hospital Employer (HE), KE, FGD 16

'…critical thinking that really built our esteem and confidence that in cases of any challenging situation I can stand out and lead the team on what to do other than other nurses who will always say…'. BScN, UG, FGD 5

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Theme IV: Acquisition of nursing knowledge, skills, and competencies

Through the programme, graduates were equipped with clinical knowledge and skills. They acquired skills such as critical thinking, communication, management and leadership, information technology, community engagement, resuscitation and midwifery.

> *'…we were not very much conversant with the computer and had very little knowledge of the computer, but at least while there we had to improve our skills'.* BScN, UG, FGD 7

> *'I have benefited from [the university] in terms of management, leadership, even my nursing skills, I have got more knowledge, research, but we've been given more than what can even apply in our areas because of several problems which we have…'.* BScN, TZ, FGD 3

Graduates also noted that they were more assertive, confident and team players with a better attitude towards their work and profession.

> '*When I was a registered nurse, I would say she is the leader she will do it, my matron will do it, [and] I am not going to wash the client. But now I know its duty to sympathise with my client and not my boss or my in-charge'.* RN, TZ, FGD 11

A comparison of the views of participants from each country showed that perspectives varied by country. Most graduate participants in Kenya said that they acquired critical thinking and leadership skills, while most of those in Uganda and Tanzania noted that they acquired basic clinical skills such as midwifery and new-born care. Nursing stakeholders interviewed (including employers, professional bodies and regulatory bodies) concurred with graduates, and highlighted some of the competencies gained.

> *'…when it comes to our colleagues, they appreciate the fact that we have undergone the training, that you a good person you can deliver good skills and the care that you give to the patient is also improved'.* RN, KE, FGD 9

> *'[the university] nurses have confidence in the clinical area, independent nurses, can do their work as many are in administrative positions in most of the hospitals, make decisions and*

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> *that is why you can see many are ward in-charges, department managers in the nursing department'.* PA, TZ, FGD 19

> *'…they are good communicators, they are leaders, they are good team players, they are very assertive, and of course confident. There is an innovativeness in them'.* Senior Official, UG, KII 12

However, some participants reported that there was a limited focus in specialised courses and some skills such as entrepreneurship, monitoring and evaluation, advocacy and research.

> *'…the issue of documentation, bedside, clinical research, and many minor [pieces of] research, even publications, as we do not have. We are still with our reports under the table. We (nurses) need to publish our work'.* BScN, KE, FGD 1

Theme V: Stakeholders' role in the programme

The programme was collectively supported by most of the nursing stakeholders. Programme graduates acknowledged support from employers, families, colleagues and faculty, while employers reported supporting students through 'giving study leave', providing financial support and providing flexible work schedules to allow students attend classes and undertake exams.

> *'We get permission from our boss that in this week I will use for studies, so it was very easy for us because the lectures were coming according to their plan, so it was accessible'.* RN, TZ, FGD 11

> *'Flexibility in our working environment, and at least we got support from management'.* RN, KE, FGD 10

Theme VI: Career and professional advancement

The programme was relevant to individual, community and workplace nursing needs. Many graduate participants noted that '*after graduating, I was promoted to in-charge*' or '*I am now a senior manager*'. Employers noted that the programme graduates' new clinical competencies had contributed to improving patient care and management of health facilities. Most participants representing

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professional bodies noted that the programme was instrumental in developing nurses keen on leadership, and who remained and worked in-country on graduation. They noted that they observed changes in the quality of nursing care and patient outcomes.

Image of the nursing profession: Graduates noted that the programme transformed them and improved their view of the profession. They also reported that the programme helped to positively change their colleagues' and communities' perception of them and nursing.

> *'I think generally [university] gives you a new figure when you complete the program. At the place of work, they consider you to be someone now not the way you were'.* HE, TZ, KII 22

> *'I was a nurse on the ward, but when I finished I was also promoted to a ward manager and it also helped me to go further with my education. Because I had a bachelor of science and I gained respect'.* BScN, UG, FGD 6

> *'…also, the course content changed the mind set of most of the southern regions where previous time, people couldn't believe that someone can attend the course while working'.* DI, KE, FGD 8

> *'Most of the nurses in the counties are from the [university]. I am positive about the kind of leadership that is impacting on nurses because when they come to the counties especially for leadership roles, they shine over other nurses and I think it is a positive contribution'.* PA, KE, FGD 16

Theme V: Strengthened health system

***Utilisation of skills*:** Most graduates used their newly-acquired clinical competencies to influence clinical practice, management and leadership, resulting in improved patient outcomes.

> *'…we have used the skills we have gained from here to make sure we overcome the challenges we are finding in places where we are working'.* BScN, KE, FGD 2

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'Through the knowledge we got in [university], we applied it and positively impacting in the community and the services we offer them and everything we are doing is positively received'. BScN, UG, FGD 6

'I can say there is an improvement of documentation, because that traditional way of documenting we are slowly getting out of we are not documenting the way we used to do, "had a calm night, slept well" we are not doing that, we are documenting each and every intervention we have done to our client, even at dispensary level'. HE, KE, KII 14

***Improved patient outcomes*:** Most participants said that the quality of patient care improved since graduating from the programme. This was also acknowledged by employers, nursing and midwifery associations and regulatory bodies.

'...the skills that I learned from [the university] I feel better placed to deliver good quality services to the community'. RN, UG, FGD 13

'They have really improved the quality of the nursing care'. HE, KE, KII 15

***Retaining nurses in the workplace*:** The work-study programme played a unique role in promoting retention of nurses in their workplace, thereby reducing the inward and outward migration of healthcare workers. Employers noted that:

'...since most of them are working as they study, they remain at the workplaces'. PA, TZ, FGD 19

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DISCUSSION

This study aimed to evaluate a 15-years impact of a work-study nursing upgrading programme implemented in East Africa. The programme was a key strategy for strengthening nursing and midwifery professions in the region through improving the nursing workforce numbers, their intellectual development and strategic positioning of the profession within the health systems (Frenk et al., 2010). These were achieved through addressing challenges of distance, cost, availability of educators and the impact on organisations in terms of time away for face-to-face teaching (Rawlinson

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et al., 2014) and infrastructural shortages (Bell, Rominski, Bam, Donkor, & Lori, 2013) that have hampered nursing education in low-resource settings.

The flexible work-based education model has been shown to reduce costs and increase accessibility of university education (Eckhardt & Froehlic, 2004), especially among rural nurses in remote, poor communities who often feel professionally isolated (Leipert & Anderson, 2012). The programme used a blended-learning approach incorporating face-to-face interaction, problem-based and student-directed learning and digital learning, which is suitable for continuing education for working nurses of different demographics (Karaman, 2011). The programme also used a mix of conventional and modern learning and teaching strategies that improved students' learning and skills acquisition (Schmidt, Vermeulen, & van der Molen, 2006; Xu, 2016), supported by a competent faculty and sufficient learning resources.

Given the changing nursing roles in service delivery and skill mix (Rakuom, 2010), the programme contributed to developing a pool of competent working nurses through improving their nursing knowledge and clinical skills, and contributing to attitude transformation. It also nurtured graduates' confidence and leadership skills that often hinder nurses' involvement in health policy (Shariff, 2014), and critical thinking skills that help nurses provide effective care and deal with the complexities of changing healthcare systems (Simpson & Courtney, 2002).

The programme impacted on the healthcare delivery system, the nursing profession and health leadership through strengthening nurses' capacity in East Africa by addressing critical gaps in their knowledge, skills and competencies (Kwesigabo et al., 2012). This is consistent with the findings of another work-based training programme in Uganda (Matovu et al., 2013). The present programme has also become a model for upskilling nursing education in the region, with similar programmes being established (Edwards, Hellen, & Brownie, 2018; Nguku, 2009). It has also proved to be successful in retention of nurses, as 98% of graduates worked in the region. This might be explained by the enrolment of mature students, who generally have a better school completion rate (Pryjmachuk, Easton, & Littlewood, 2009) and clear career paths. It might also be attributable to opportunities to

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advance nursing education while retaining their job, which has been cited as a key reason for migration (Nguyen et al., 2008; Shemdoe et al., 2016).

The programme contributed to improving the image of the nursing profession among nurses through increasing access to higher nursing education, which improved nurses' image of their profession, enhanced the use of evidence-based practice and improved patient outcomes (Mboya & Jooste, 2013). Moreover, the programme contributed to enhancing the 'triple impact' of the nursing and midwifery professions, by improving health, gender equality and economic growth (All-Party Parliamentary Group on Global Health (APPG), 2016). Although nursing is a female-dominated profession (Ezeonwu, 2013), the work-study upgrade programme contributed to upskilling working nurses, with the resulting empowerment reducing gender inequality, promoting upward intergenerational education mobility and career advancement and increasing the family's income (thereby creating economic and community empowerment and growth) (Brownie, Wahedna, & Crisp, 2018).

A key aspect of the work-study programme was the strategic partnership between stakeholders anchored on the three tenets of the model to advance graduate nursing in Kenya: vision championship, mutual benefit and relationship building (Mutea & Cullen, 2012). The present findings showed shared goals between stakeholders and graduates, with continuous efforts to ensure support and relationship building. This highlighted benefits of education-service partnerships in addressing health workforce challenges in low-resource settings (Middleton et al., 2014; Tache et al., 2008).

Despite successfully upskilling their nursing education, some graduates had out-migrated, or did not secure promotions, pay raises or increased responsibilities. This might be attributable to inconsistency between the number of upskilling nurses versus available opportunities, and lack of a scheme of service in some countries such as Uganda. However, as noted in a study on private nursing education in East Africa, there is a need for policy coherence to ensure that the production of nurses is consistent with the demand for nurses (Reynolds et al., 2013).

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CONCLUSION

The work-study programme positively impacted the nursing profession, health systems and policy, along with nursing regulation, management, and leadership in East Africa. The programme was effective in upgrading and developing the existing nursing workforce. Partnership with donors was crucial for increasing access for all nurses via scholarships that supported study, travel and accommodation costs. The future success of the programme depends on the university building on the success of the past 15 years and addressing existing and new challenges. Specifically, the university needs to be adaptable to the changing higher education regulatory environment with new roles for faculty and academic requirements, and a changing competitive landscape with online offerings and increased providers. The university also needs to provide leadership for the next frontier of building the ability of the nursing workforce in East Africa by continuing to develop leaders who act as catalysts for change in the health system and society.

Relevance to clinical practice

This study evaluated the impact of a work-study nursing upgrading programme as a strategy to strengthen the nursing and midwifery workforce, consistent with the World Health Assembly resolution 54.12. The programme improved access to advanced nursing education in East Africa, and provided an effective nursing workforce capacity building strategy for low-resource settings.

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REFERENCES

Aga Khan University. (2017). Alumni survey report: 2016 (Alumni Affairs, Trans.) *Alumni Surveys* (Vol. Book 1). Karachi, Pakistan: Aga Khan University. Retrieved from https://ecommons.aku.edu/alumni_survey/1

All-Party Parliamentary Group on Global Health (APPG). (2016). Triple impact: How developing nursing will improve health, promote gender equality and support economic growth. London: All-Party Parliamentary Group on Global Health. Retrieved from http://www.appg.globalhealth.org.uk/

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*(2), 244-249. doi: 10.1111/nhs.12026

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101. doi: 10.1191/1478088706qp063oa

Brownie, S., & Oywer, E. (2016). Health professionals in Kenya: Strategies to expand reach and reduce brain drain of psychiatric nurses and pyschiatrists. *BJPsych International, 13*(3). doi: 10.1192/S2056474000001227

Brownie, S., Robb, W., Hunter, L., Aliga, C., Kambo, I., Machar, A., . . . Xavier, M. (2016). Supporting healthy futures for East Africa: Celebrating 15 years of partnership in nursing education (1st ed.). Nairobi, Kenya: Aga Khan University. Retrieved from http://ecommons.aku.edu/books/55/

Brownie, S., Wahedna, A. H., & Crisp, N. (2018). *Nursing as a pathway to women's empowerment and inter-generational mobility*. (Manuscript submitted for publication).

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4 ed.). California, USA: Sage publications.

Eckhardt, J. A., & Froehlic, H. (2004). An education-service partnership: Helping RNs obtain baccalaureate degrees in nursing at their practice sites. *Journal of Nursing Education, 43*(12), 558-561. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/15620070

For Peer Review

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Edwards, G., Hellen, K., & Brownie, S. (2018). Developing a work/study programme for midwifery education in East Africa. *Midwifery, 59*, 74-77. doi: 10.1016/j.midw.2018.01.007

Eysenbach, G. (2004). Improving the quality of web surveys: The checklist for reporting results of internet e-surveys (cherries). *Journal of Medical Internet Research, 6*(3). doi: 10.2196/jmir.6.3.e34

Eysenbach, G. (2012). Correction: Improving the quality of web surveys: The checklist for reporting results of internet e-surveys (cherries). *Journal of Medical Internet Research, 14*(1), e8. doi: 10.2196/jmir.2042

Ezeonwu, C. (2013). Nursing education and workforce development: Implications for maternal health in Anambra State, Nigeria. *International Journal of Nursing and Midwifery, 5*(3), 35-45. doi: 10.5897/ijnm12.014

Frenk, J., Chen, L., Bhutta, Z. A., Cohen, J., Crisp, N., Evans, T., . . . Zurayk, H. (2010). Health professionals for a new century: Transforming education to strengthen health systems in an interdependent world. *The Lancet, 376*(9756), 1923-1958. doi: 10.1016/s0140-6736(10)61854-5

Freund, T., Everett, C., Griffiths, P., Hudon, C., Naccarella, L., & Laurant, M. (2015). Skill mix, roles and remuneration in the primary care workforce: Who are the healthcare professionals in the primary care teams across the world? *International Journal of Nursing Studies, 52*(3), 727-743. doi: 10.1016/j.ijnurstu.2014.11.014

Karaman, S. (2011). Nurses' perceptions of online continuing education. *BMC Medical Education, 11*, 86. doi: 10.1186/1472-6920-11-86

Kenya National Bureau of Statistics. (2017). Economic survey 2017. Nairobi, Kenya: Kenya National Bureau of Statistics. Retrieved from https://www.knbs.or.ke/download/economic-survey-2017/

Kwesigabo, G., Mwangu, M. A., Kakoko, D. C., Warriner, I., Mkony, C. A., Killewo, J., . . . Freeman, P. (2012). Tanzania's health system and workforce crisis. *Journal of Public Health Policy, 33 Suppl 1*, S35-44. doi: 10.1057/jphp.2012.55

For Peer Review

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Leech, N. L., & Onwuegbuzie, A. J. Guidelines for conducting and reporting mixed research in the field of counseling and beyond. doi: 10.1002/j.1556-6678.2010.tb00151.x

Leipert, B., & Anderson, E. (2012). Rural nursing education: A photovoice perspective. *Rural and Remote Health, 12*(2061). Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/22668083

Liu, J. X., Goryakin, Y., Maeda, A., Bruckner, T., & Scheffler, R. (2017). Global health workforce labor market projections for 2030. *Hum Resour Health, 15*(1), 11. doi: 10.1186/s12960-017-0187-2

Matovu, J. K., Wanyenze, R. K., Mawemuko, S., Okui, O., Bazeyo, W., & Serwadda, D. (2013). Strengthening health workforce capacity through work-based training. *BMC International Health and Human Rights, 13*, 8. doi: 10.1186/1472-698X-13-8

Mboya, M. M., & Jooste, K. (2013). Nursing and midwifery education in Africa: The millennium development goals and beyond. *Research Series on Development in Africa*. Retrieved from http://www.nepad.org/download/file/fid/5057

Middleton, L., Howard, A. A., Dohrn, J., Von Zinkernagel, D., Parham Hopson, D., Aranda-Naranjo, B., . . . El-Sadr, W. M. (2014). The nursing education partnership initiative (NEPI): Innovations in nursing and midwifery education. *Academic Medicine, 89*(8 Suppl), S24-28. doi: 10.1097/ACM.0000000000000342

Munga, M. A., & Maestad, O. (2009). Measuring inequalities in the distribution of health workers: The case of Tanzania. *Hum Resour Health, 7*, 4. doi: 10.1186/1478-4491-7-4

Mutea, N., & Cullen, D. (2012). Kenya and distance education: A model to advance graduate nursing. *International Journal of Nursing Practice, 18*(4), 417-422. doi: 10.1111/j.1440-172X.2012.02043.x

Mwizerwa, J., Robb, W., Namukwaya, C., Namuguzi, M., & Brownie, S. (2017). Improving response rates to an alumni survey in East Africa. *Advances in Social Sciences Research Journal, 420*, 120-127. doi: 10.14738/assrj.420.3742

For Peer Review

Nguku, A. (2009). *Nursing the future: E-learning and clinical care in Kenya* The Policy Voices, Retrieved from https://www.africaresearchinstitute.org/newsite/publications/policy-voices/nursing-the-future-e-learning-and-clinical-care-in-kenya/

Nguyen, L., Ropers, S., Nderitu, E., Zuyderduin, A., Luboga, S., & Hagopian, A. (2008). Intent to migrate among nursing students in Uganda: Measures of the brain drain in the next generation of health professionals. *Human Resources for Health, 6*, 5. doi: 10.1186/1478-4491-6-5

Onwuegbuzie, A. J., & Corrigan, J. A. (2014). Improving the quality of mixed research reports in the field of human resource development and beyond: A call for rigor as an ethical practice. *Human Resource Development Quarterly, 25*(3), 273-299. doi: 10.1002/hrdq.21197

PayScale. (28 April 2018). Registered nurse salary (Kenya). Retrieved 2 May 2018, from https://www.payscale.com/research/KE/Job=Registered_Nurse_(RN)/Salary

Pryjmachuk, S., Easton, K., & Littlewood, A. (2009). Nurse education: Factors associated with attrition. *Journal of Advanced Nursing, 65*(1), 149-160. doi: 10.1111/j.1365-2648.2008.04852.x

Rakuom, C. (2010). Nursing human resources in Kenya: Case study. Geneva, Switzerland: International Centre for Human Resources in Nursing. Retrieved from http://www.icn.ch/images/stories/documents/pillars/sew/ICHRN/Publications/Case_Studies/Nursing_Human_Resources_in_Kenya_Case_Study.pdf

Rawlinson, F., Gwyther, L., Kiyange, F., Luyirika, E., Meiring, M., & Downing, J. (2014). The current situation in education and training of health-care professionals across Africa to optimise the delivery of palliative care for cancer patients. *Ecancermedicalscience, 8*, 492. doi: 10.3332/ecancer.2014.492

Reynolds, J., Wisaijohn, T., Pudpong, N., Watthayu, N., Dalliston, A., Suphanchaimat, R., . . . Sawaengdee, K. (2013). A literature review: The role of the private sector in the production of nurses in India, Kenya, South Africa and Thailand. *Hum Resour Health, 11*, 14. doi: 10.1186/1478-4491-11-14

Schmidt, H. G., Vermeulen, L., & van der Molen, H. T. (2006). Longterm effects of problem-based learning: A comparison of competencies acquired by graduates of a problem-based and a conventional medical school. *Medical Education, 40*(6), 562-567. doi: 10.1111/j.1365-2929.2006.02483.x

Shariff, N. (2014). Factors that act as facilitators and barriers to nurse leaders' participation in health policy development. *BMC Nursing, 13*, 20. doi: 10.1186/1472-6955-13-20

Shemdoe, A., Mbaruku, G., Dillip, A., Bradley, S., William, J., Wason, D., & Hildon, Z. J. (2016). Explaining retention of healthcare workers in Tanzania: Moving on, coming to 'look, see and go', or stay? *Hum Resour Health, 14*, 2. doi: 10.1186/s12960-016-0098-7

Simpson, E., & Courtney, M. (2002). Critical thinking in nursing education: Literature review. *International Journal of Nursing Practice, 8*(2), 89-98. doi: 10.1046/j.1440-172x.2002.00340.x

Tache, S., Kaaya, E., Omer, S., Mkony, C. A., Lyamuya, E., Pallangyo, K., . . . Macfarlane, S. B. (2008). University partnership to address the shortage of healthcare professionals in Africa. *Glob Public Health, 3*(2), 137-148. doi: 10.1080/17441690701766486

Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (coreq): A 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care, 19*(6), 349-357. doi: 10.1093/intqhc/mzm042

Uganda Bureau of Statistics. (2017). Uganda statistical abstract 2017. Kampala, Uganda: Uganda Bureau of Statistics. Retrieved from http://www.ubos.org/onlinefiles/uploads/ubos/statistical_abstracts/2017_Statistical_Abstract.pdf

Uganda Nursing and Midwifery Council. (2015). Performance report financial year 2014/2015 (july 2014 to june 2015). Kampala, Uganda: Uganda Nursing and Midwifery Council. Retrieved from http://unmc.ug/download/UNMC%20Perfomance%20Report%20FY-14-15.pdf

For Peer Review

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URN. (28 November 2017). Nurses demand 400% salary increment within 7 days. Retrieved 2 May 2018, from http://observer.ug/news/headlines/56188-nurses-demand-400-salary-increment-within-7-days.html

Vandenbroucke, J. P., von Elm, E., Altman, D. G., Gotzsche, P. C., Mulrow, C. D., Pocock, S. J., . . . Egger, M. (2007). Strengthening the reporting of observational studies in epidemiology (strobe): Explanation and elaboration. *Epidemiology, 18*(6), 805-835. doi: 10.1097/EDE.0b013e3181577511

World Health Organisation. (2016a). Global strategic directions for strengthening nursing and midwifery 2016–2020. Geneva, Switzerland: World Health Organisation. Retrieved from http://www.who.int/hrh/nursing_midwifery/global-strategic-midwifery2016-2020.pdf

World Health Organisation. (2016c). Global strategy on human resources for health: Workforce 2030 *Global strategy on human resources for health: workforce 2030*. Geneva, Switzerland: World Health Organisation. Retrieved from http://apps.who.int/iris/bitstream/handle/10665/250368/9789241511131-eng.pdf;jsessionid=A8060808FFEB0E22614E052DF53F8E1F?sequence=1

Xu, J.-h. (2016). Toolbox of teaching strategies in nurse education. *Chinese Nursing Research, 3*(2), 54-57. doi: 10.1016/j.cnre.2016.06.002

For Peer Review

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TABLES

Table 1. Distribution of key informant interviews and focus group discussions among stakeholders across East Africa

FGD/ KII	Stakeholder group	Kenya	Tanzania	Uganda	Total	Total no. of participants
FGD	BScN	2	1	4	7	50
FGD	Diploma	3	1	4	8	63
FGD	Professional Associations	3	2	0	5	15
KII	Hospital Employer	6	4	2	12	12
KII	Clinic/Dispensary Employer	3	0	0	3	7
KII	Senior Nursing Officers	4	5	3	12	22
	Total	**21**	**13**	**13**	**47**	**172**

FGD, focus group discussion; KII, key informant interview.

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Table 2. Participants' characteristics by country of study

Variables	Kenya (n=134)	Uganda (n=241)	Tanzania (n=174)	Total
	n (%)	n (%)	n (%)	n (%)
County of study	134 (24.4)	241 (43.9)	174 (31.7)	549 (100)
Response rate				
Total alumni to date	939	593	606	2138
Number of responses†	134 (14.0)	241 (41.0)	174 (29.0)	549 (25.7)
Financial aid				
Students supported/awarded	803 (85)	540 (91)	553 (91)	1896 (89)
Study cohort				
2001–2005	7 (5.2)	19 (7.9)	12 (6.9)	38 (6.9)
2006–2010	54 (40.3)	72 (29.9)	102 (58.6)	228 (41.5)
2011–2015	73 (54.5)	150 (62.2)	60 (34.5)	283 (51.5)
Age group				
18–30 years	5 (3.7)	34 (14.1)	1 (0.6)	40 (7.3)
31–40 years	64 (47.8)	120 (49.8)	50 (28.7)	234 (42.6)
41–50 years	53 (39.6)	64 (26.6)	87 (50.0)	204 (37.2)
Above 50 years	12 (9.0)	23 (9.5)	36 (20.7)	71 (12.9)
Employment status				
Currently employed	129 (96.3)	213 (88.4)	169 (97.1)	511 (93.1)
Unemployed	3 (2.2)	7 (2.9)	1 (0.6)	11 (2.0)
Training	1 (0.7)	10 (4.1)	3 (1.7)	14 (2.6)
Others	1 (0.7)	11 (4.6)	1 (0.6)	13 (2.4)
Participants' highest education level				
Diploma/specialist diploma	38 (28.4)	105 (43.6)	71 (40.8)	214 (39.0)
BScN and above	96 (71.6)	136 (56.4)	103 (59.2)	335 (61.0)
Changes in employment 2 years after graduation (n=532)				
No change	44 (33.6)	60 (25.1)	38 (23.5)	142 (26.7)
Promotion	64 (48.9)	107 (44.8)	91 (56.2)	262 (49.2)
Pay rise	16 (12.2)	45 (18.8)	24 (14.8)	85 (16.0)
Changed jobs	1 (0.8)	8 (3.3)	4 (2.5)	13 (2.4)
Others	6 (4.6)	19 (7.9)	5 (3.1)	30 (5.6)
Improvements on graduation (n=409)‡				
Nursing practices	37 (31.6)	39 (23.2)	30 (24.2)	106 (25.9)
Patient outcomes	4 (3.4)	10 (6.0)	5 (4.0)	19 (4.6)
Professional competence	76 (65.0)	119 (70.8)	89 (71.8)	284 (69.4)
Region of work				
Urban	103 (79.8)	177 (80.8)	146 (89.6)	426 (83.4)
Rural	26 (20.2)	42 (19.2)	17 (10.4)	85 (16.6)
Country of employment				
Kenya	(94)	(1)		
Uganda		(96)		(98)
Tanzania			(99)	
Outside East Africa	(6)	(3)	(1)	(2)
Female intergenerational mobility§				
Two levels higher	65 (72.2)	110 (67.5)	103 (91.2)	278 (76.0)
One level higher	16 (17.8)	31 (19.0)	4 (3.5)	51 (13.9)
Same/lower	9 (10.0)	22 (13.5)	6 (5.3)	37 (10.1)

BScN, Bachelor of Science in Nursing. † Percentage in parentheses represents the response rate; ‡ nurses who were working before their last programme at the university; § Female respondents' intergenerational education mobility based on their mothers' education level.

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Table 3. Participants' satisfaction with their university experience (n=106)

	Strongly agree %	**Agree %**	**Neither agree nor disagree %**	**Disagree %**	**Strongly disagree %**
The faculty were experts in their respective fields and were proficient in the subjects they taught	61.4	37.2	0.7	0.4	0.4
The faculty were excellent at imparting knowledge and they guided and stimulated my professional development	69.1	30.1	0.4	-	0.4
The education and training I received was relevant to my career goals	86.6	12.4	0.4	0.2	0.4
The programme provided the right level of learning and challenge	72.9	26.2	0.6	-	0.4
I developed my abilities for interpersonal communications and relationship building	76.4	22.1	0.9	-	0.6
The instructional facilities at [the university], (including classrooms, labs, clinics, wards) met or exceeded my expectations	40.1	52.1	5.8	1.5	0.6
The availability and collection of information resources (such as the library, computer access) met or exceeded my expectations	66.8	29.7	3.2	-	0.4
I developed a greater sense of community service and had opportunities for engagement and outreach	58.1	36.3	4.6	0.4	0.6
My leadership abilities were further groomed and sharpened	73.0	25.3	1.3	-	0.4
I developed a greater sense of self-esteem and self-confidence	80.6	18.1	0.9	-	0.4
I would recommend my [the university] programme to others	88.3	11.0	0.2	-	0.6

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What does this paper contribute to the wider global clinical community?

- A work-study nursing upgrading programme is an effective nursing workforce capacity building strategy in low-resource settings
- Private-public partnerships are an effective mechanism to strength nursing, midwifery, and the overall healthcare workforce in low resource settings

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FIGURES

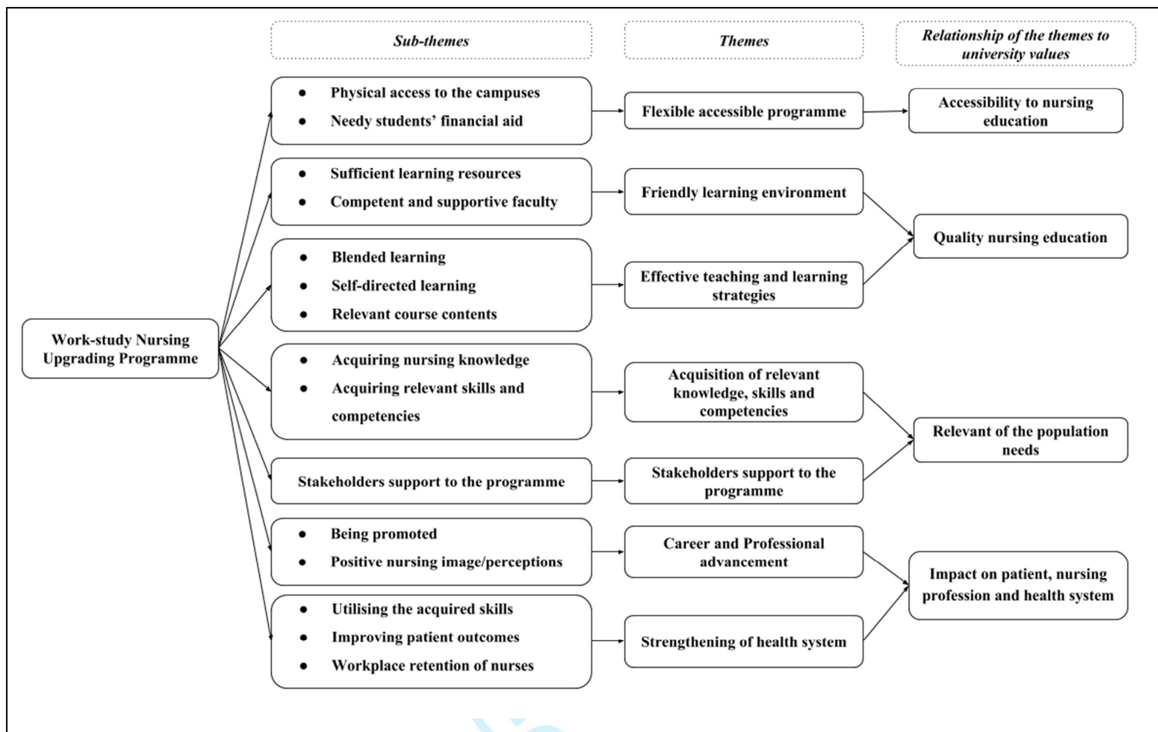

Figure 1. Thematic framework

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