

**Peer-reviewed article****Factors enabling and hindering an eLearning programme for nurses and midwives in Afghanistan**

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### Abstract

Afghanistan faces an acute shortage of trained healthcare providers. To build capacity of nurses and midwives, in 2014 a private hospital in Afghanistan initiated an eLearning programme to enhance their knowledge and skills. The study was conducted to identify facilitating and hindering factors for the successful implementation of eLearning. Data collection took place between June and September 2016, when seven Maternal and Child Health (MNCH) related eLearning sessions were conducted. The participants were nurses and midwives working in MNCH wards at the research sites in Bamyan, Faizabad and Kandahar, along with the programme planners and facilitators. Data was collected through pre/post and delayed post-tests, observations and questionnaires, semi-structured interviews and documents analysis. The results highlight four major factors as important for the successful implementation of eLearning, namely: curriculum, context, technology and individual. The needs assessment ensured relevance of the sessions to the needs of the participants. However, pedagogy was lecture-based with limited focus on skills development. Poor connectivity and language of instruction posed challenges. eLearning has shown the potential for developing knowledge and skills of nurses and midwives. Clear communication between teams involved in planning and implementation of the programme, technology infrastructure, design of online pedagogy and facilitator readiness are critical for the success of eLearning in low and middle income countries.

## Introduction

In Afghanistan, the infrastructural destruction, poverty, and mass out-migration of trained healthcare providers during internal unrest over the last two decades have impacted the healthcare sector. Since 2002, following the decline of Taliban rule, multiple reforms have been undertaken in the education of healthcare professionals. In 2010, the Afghan Ministry of Health in conjunction with the World Health Organization (WHO) estimated a ratio of 1 nurse for every 4933 individuals in the population, while estimating a modest increase of practitioner to population ratio from 7.26 per 10,000 in 2006 to 9.12 per 10,000 in the period 2012-16 (GDHR, 2011). The establishment of professional bodies such as the Afghan Midwives Association in 2005 to advocate for safe motherhood and strengthen the capacity of midwives in Afghanistan has been instrumental in strengthening healthcare systems and maternal and child health in the country (Turkmani, Gohar, Shah, Hamnawazada & Zyaee, 2015). However, significant monetary investments and technological improvements are required to enhance the pre-service education of midwives to advance the standardization of the nursing/midwifery educational curriculum and guidelines for accreditation, as well as to mobilize recruitment and deployment of midwives to underserved areas (Currie & Guah, 2007).

Against this backdrop, with a grant from an international donor agency, an eLearning programme was initiated in 2014 to train healthcare providers in Afghanistan with the intent of improving the quality of healthcare services primarily in the area of Maternal, Newborn and Child Health (MNCH). The starting point of the programme was to establish a baseline to guide strategic planning for targeted healthcare services. A key element of this strategic planning was a needs-assessment exercise to identify relevant topics and issues that require educational interventions in order to ensure a state of readiness to adopt and operationalize the targeted healthcare services to transform the healthcare system. Because of a lack of expertise in many of the identified areas, an eLearning programme was designed to build the capacity of local healthcare providers. The programme covered topics in the realm of adult health nursing, infection control in the hospital, and pediatric nursing. Initially, the educational content for the eLearning sessions was designed and taught by subject-experts from a private hospital in Kabul (henceforth 'Hospital K'). Technical support was provided by the IT team at Hospital K. The content was taught through one-hour synchronous lectures using video-conferencing facilities. Healthcare providers attended the sessions from the video-conference rooms in the healthcare facilities from three locations in Afghanistan, i.e. Bamyan, Faizabad and Kandahar. From January until November 2014; 79 eLearning sessions were conducted. The eLearning programme leaders received requests to offer these sessions to other locations as well.

## Literature Review

The use of information and communication technologies (ICT) in education—referred to here as eLearning—has substantially grown for continuing the education of nurses in the last two decades. The key motivators contributing to the growth of eLearning, as identified in the literature, are: (a) necessity of establishing a computer-literate workforce; (b) ability to address a variety of learning styles and abilities among students, including self-directed learning; and (c) flexibility of learning opportunities to ensure that knowledge and skills remain up to date (Frehywot, Vovides, Talib, Mikhail, Ross, Wohltjen *et al*, 2013).

The benefits and effectiveness of eLearning for continuing medical and nursing education are well documented. Firstly, eLearning offers a variety of formats for teaching and learning. For instance, teaching through eLearning approaches has evolved from simple, passive, text-based learning resources to interactive, multimedia, and social learning resources based on learners' needs and styles. Secondly, the continued global expansion in the use of eLearning has invited and stimulated innovation within nurse education, such as simulation, digital teaching aids, online teaching and virtual learning environments. Thirdly, in areas with staff shortages and geographical isolation, the ability for nurses to continue their face-to-face professional development has been dramatically impaired. Innovative methods like eLearning have ensured that nurses can continually develop their knowledge and skillset (Glogowska, Young, Lockyer & Moule, 2011; Johnson, List-Ivankovic, Eboh, Ireland, Adams, Mowatt *et al*, 2010).

Other research studies also found medical staff were satisfied with the provision of 'continuing medical education' (CME) services through eLearning, as it reduced travel expenses and time away from home and work; provided opportunities for just-in-time learning; and allowed participants to interact through a variety of innovative formats (Pinto, Brunese, Pinto, Acampora & Romano, 2011; Lewis, Cidon, Seto, Chen & Mahan 2014). Further, McCutcheon, Lohan, Traynor & Martin (2014) reviewed the impact of online or blended learning programmes versus face-to-face learning of clinical skills taught to undergraduate nursing students. They observed that online learning for teaching clinical skills was no less effective than traditional face-to-face learning. Wutoh, Boren & Balas (2004) also reviewed the literature regarding eLearning and concluded that CME through eLearning improved access, convenience, and flexibility for medical education professionals. Cook's (2009) systematic review revealed that internet-based learning is educationally beneficial as it led to achieving effective learning outcomes which were mainly associated with participant-to-participant interaction, conceptual understanding, and open access to instructional materials.

In the context of Low and Middle-Income Countries (LMICs), a review of continuing healthcare education through eLearning suggests that, although reasons for engaging in eLearning varied from one country or context to another, the core purpose remained to provide supplementary tools to support faculty teaching and to share digital resources with students to expand their access to education (Frehywot *et al*, 2013). We now turn to describing several implemented examples of eLearning programmes for healthcare providers.

A course on neonatal mortality and newborn care and management developed for physicians and nurses used eLearning strategies to disseminate educational resources across India, especially in low-resourced, challenging-to-reach rural areas (Deorari, Thukral & Chandrasekaran, 2014: 1380). "Managerial and information technology (IT) support, committed instructors, motivated users and a flexible, user-friendly interface" were identified as the key elements for the success of the programme. Another example saw the Geneva Foundation for Medical Education and Research (GFMER) in partnership with the WHO, design and deliver an intensive one-month (and a longer eight-month) online course on sexual and reproductive health for physicians, nurses, and midwives from developing countries such as Afghanistan, India, Egypt, Uganda, Nigeria and Mongolia (Abawi, Chandra-Mouli, Toskin, Festin, Gertiser, Idris *et al*, 2016). Nearly all participants reported being able to apply their acquired skills and knowledge in clinical and public health practice, and over 80% subsequently reported career advancement due to their participation in the online course. Since the curriculum and

materials were all in English, a certain level of professional and scientific proficiency in English was required. However, if challenges were encountered, participants were able to refer to their local tutors to understand the content in their regional language. The success of the course was largely attributed to timely feedback, ICT facilities, and a highly interactive relationship between local coaches, distance educators, and current students.

Despite the successes of such programmes, challenges remain. A review by Frehywot *et al* (2013) identified the challenges affecting the implementation of eLearning as: computer literacy, the language of instruction and operations, management of technical resources, management of finance, and socio-legal restrictions on curriculum development within the country. The most salient challenges outlined in Frehywot *et al's* review of 124 studies were poor bandwidth (e.g. slow speed; poor quality of videos), inadequate computer facilities, lack of face-to-face interaction (in online-only offerings), and power-supply instability. Other technical and logistic issues identified were limited IT technicians for creating and supporting online programmes, working across time zones in real-time online learning, and financial costs of implementing and maintaining the infrastructure (e.g. computer labs and cloud-based services). Cultural and linguistic adaptability of the curriculum and resources were also highlighted as potentially affecting eLearning, such as experienced in an Eritrean nursing/midwifery faculty training project which was impeded by the adaptation and translation from English to Tigrinya and Arabic (Johnson, Ghebreyohanes, Cunningham, Kutenplon, & Bouey, 2007).

Similar to Frehywot *et al's* findings, in an earlier review, Andersson and Grönlund (2009) identified 30 challenges to eLearning in developing countries grouped into four categories: (1) contextual (organizational, cultural and societal); (2) courses/curriculum (content, design and delivery); (3) characteristics of the individuals involved (facilitator and learners); and (4) technology (hardware, software, connectivity). None of these is independent, and inter-relationships must be considered. For example, course design must reflect both individuals' level of flexibility (in terms of course personalization, time and finance) and their localization (i.e., religious beliefs, social norms, local language, as well as socio-political and legal contexts). Also, contextual challenges mainly refer to financial management and funding for the ICT and personnel training, power dynamics between facilitator and learner roles, societal attitudes towards eLearning and ICT, and governmental and legal barriers.

While all these challenges were important for both developed and developing countries, different challenges were given greater importance in each context, depending on the state of readiness. For example, in developed countries, published papers have focused on findings associated with individuals, while those from developing countries focused more on infrastructure and context-related issues. Thus, to fully understand the factors affecting the acceptance and adoption of eLearning in LMICs, all four categories of challenges (i.e., contextual, course/curriculum, individual and technological) need to be studied.

As such, the four categories of challenges identified by Andersson and Grönlund (2009) form the framework for the analysis in our study. They were used to identify the salient factors that enabled or hindered the implementation of the eLearning programme initiated in Afghanistan in 2014, before extending eLearning offerings to other locations. Specifically, the findings of this study would inform

the design of future eLearning for CME of nursing and midwifery programmes in Afghanistan, so as to enable healthcare institutes to achieve the goals of providing good quality healthcare in the region.

Our research questions were thus as follows:

- a) What are the strengths and challenges of the eLearning programme?
- b) What are the factors that enabled or hindered successful implementation of the eLearning programme?

## Methods

The study adopted a mixed quantitative and qualitative approach – which included, semi-structured interviews, survey questionnaires, and a review of programme documents. Data were collected from four major groups, namely institutional leaders, programme implementers and facilitators through semi-structured interviews; and from the programme participants through the use of a survey questionnaire.

## Sample

The data were collected between June and September 2016, during which seven MNCH-related eLearning sessions were designed and conducted by subject experts at a healthcare facility in Karachi (henceforth “Hospital A”), on topics related to MNCH and offered through a video-conference system. Each session was one-hour long with an additional time commitment for pre-and post-tests. IT support was provided by a team in Karachi in conjunction with the local IT teams in the three locations, i.e. Bamyán, Faizabad and Kandahar.

The participants were nurses and midwives working in MNCH wards at the research sites. The participant group included all participant attendees (N=38) who agreed to participate in the study. The second group were ‘leaders’ which included both programme and organizational leaders and programme implementers. Programme implementers were based in Karachi and Kabul and were responsible for technical and logistic support for the sessions. The organizational leaders were based in Afghanistan and Karachi, and they held roles such as hospital CEO, Nurse Manager, Hospital Manager and Head Nurse. A third and much smaller group of facilitators based at Hospital A in Karachi was also included, but their data was merged with the second group in order to maintain confidentiality. Twenty-three programme planners, facilitators, and other organizational leaders were invited for semi-structured interviews of which seventeen agreed to participate.

## Data collection tools and procedure

A survey questionnaire was developed to gather data from nurses and midwives about their perceptions of the eLearning programme before and after attending the seven MHCH eLearning sessions. The questionnaire had 65 items divided into four sections. Sections I and II were administered before the eLearning sessions, while Sections III and IV were administered six weeks after the eLearning sessions (see Table 1 for details of the sections).

Table 1: Number of items and sections of the questionnaire

Section	Questions	Focus
I	15	Demographics
II	12	Participants' ICT Access
III	5	Overall experience of the eLearning sessions
IV	3	Prior experience of eLearning sessions

Validity of the questionnaire was established through an expert review for content appropriateness, relevance, and clarity of language. The questionnaire was translated into two local languages (Dari and Pashto) and back translated to English to ensure accuracy of the original meaning and to remove any misunderstandings. The printed, self-administered questionnaires were given to participants and were to be returned the following day.

Semi-structured interviews were conducted with the programme planners, implementers and facilitators and organizational leaders to gain an in-depth understanding of the challenges and successes of the programme, and to identify factors affecting implementation of the eLearning programme. Seventeen (17) semi-structured interviews were conducted. When participants were not available face-to-face, interviews were conducted via Skype. Each interview was recorded with the permission of the interviewee. The average interview time was 45 minutes. The participants were given the choice of English and/or local languages. All interviews were conducted in English, as it was the interviewees' preferred language of communication. Table 2 provides a breakdown of the total number of participants who participated in the study through questionnaires and semi-structured interviews.

Table 2: Summary of the sample size methodology

Location	Questionnaire			Interviews Leaders, programme implementers and facilitators
	Midwives*	Nurses*	Total*	
Bamyan	10	3	13	2
Faizabad	0	15	15	2
Kandahar	2	8	10	1
Kabul	-	-	-	6
Karachi	-	-	-	6
<b>Total</b>	<b>12</b>	<b>26</b>	<b>38</b>	<b>17</b>

\*All the nurse and midwife participants were female.

The documents related to the eLearning programme (e.g. notes of the monitoring and evaluation teams, lesson plans, previous reports, reflections of the data collectors and feedback forms filled by the participants after each eLearning session) were reviewed to understand the programme's design, rationale, successes and challenges.

## Data analysis

To analyse the data, all the semi-structured interviews were transcribed. To ensure credibility and trustworthiness, the accuracy of transcripts was verified by respondents via email, and participants were requested to respond by a given date, after which transcripts would be accepted without edits. The respondents replied with no revisions; therefore, all the transcripts were accepted as an accurate record of their interviews. The transcripts of the semi-structured interviews were read and re-read line by line to identify themes by four team members individually. To conduct a thematic analysis, the data coded from separate interviews were then grouped under each theme identified as per the categories defined by Andersson and Grönlund (2009) (i.e., contextual, course/curriculum, individual, and technological).

The open-ended responses in the questionnaire and documents, such as reflections of the data collectors/observers, and feedback forms filled by the participants after each eLearning session, were also analysed using the above-mentioned technique. Data triangulation was done by involving multiple researchers and methods (Denzin, 1973).

## Results

In order to have a more in-depth understanding of the strengths and challenges of the eLearning programme (as well as factors that hindered enabled or hindered the implementation), this paper focuses on responses drawn from the open-ended section of the questionnaire and semi-structured interviews with multiple stakeholders (i.e., eLearning programme participants, facilitators, leaders, and programme implementers). The results are discussed in terms of the aforementioned four major themes (Andersson and Grönlund, 2009) as well as the strengths and challenges of the programme. All responses are labelled as following:

- P - Participants of the eLearning programme.
- IL- Interviews with Leaders, facilitators and programme implementers.

## Contextual factors

Contextual factors refer to the background characteristics in which the programme was designed and implemented, including the organizational, cultural, and policy context of the country. Four kinds of contextual factors were identified, each of which is discussed in the sub-sections that follow.

### Macro-level factors

At the macro level, at the time of the study in Afghanistan, there was an acute shortage of trained physicians, nurses, and midwives as many healthcare professionals had left the country due to war and difficult socio-political situations. A leader mentioned that most practicing nurses and midwives were not formally trained but had received on-the-job training through voluntary clinical work during the war years. This left gaps in their knowledge:

...[for] those who had worked 3 – 4 years [voluntarily in hospitals], the government said we are giving you a nurse certificate and you can do your job as a nurse ... [many had] no [formal clinical] training, no academic training or proper experience ... because of that,

they did not have proper knowledge of anatomy, physiology, etc., ... So [we] did a lot of training in basic and professional topics.... A lot of work has been done and improvement seen because of the eLearning programme (IL06).

The local healthcare providers required training and the eLearning programme provided access to ongoing work-based training that would enable nurses and midwives to update their knowledge and clinical skills in a manner not previously possible. Several participants from Faizabad reported that the eLearning programme provided them access to up-to-date training (e.g. P202, P203, P205, P206, P212, P215). An eHealth coordinator commented: "Due to a lack of security of the healthcare providers, ... like in Faizabad ..., nurses and midwives are not able to go and attend trainings. So, they are completing training through these eLearning sessions" (IL12).

#### Organizational factors

At the level of the organization, there was support from leaders which was considered critical for the success of the programme. A nursing education coordinator mentioned that:

Our organization and leadership have always been supportive [of the eLearning programme], and they were motivating us. Notably, the CEO and our nursing administrator always discussed eLearning sessions and took feedback on its success. CEO once also attended eLearning session in Bamyan (IL02).

Three reasons were noted as necessary in relation to the leaders' support. Firstly, the programme provided opportunities for nurses and midwives to attend training without taking time off from work and saving costs, which was an important criterion for leadership support, as exemplified by one programme leader: "There is a willingness within the organization to continue with eLearning because we, as an implementer, also want our employees to be on their work while receiving training and not to send them for longer time outside of their station" (IL08).

Secondly, there was a common perception that participation in the eLearning sessions had improved the quality of care provided to the patients, as reflected in the following comments from a programme leader:

...the nurses have changed some of their behaviours and work skills. They are implementing new skills in their jobs... certain [previously neglected] topics are being talked about. They are getting new updated information and new standards, which they are implementing, and we see that in their performance. This is why we think eLearning sessions are important (IL16).

Finally, the organizational leaders believed that the eLearning programme reduced professional isolation by enabling nurses and midwives to become connected to professionals outside their local health facilities. A programme leader noted: "... nurses and doctors say that they are now connected to the world, so we are reducing isolation; this is one of the most important successes" (IL06). This was confirmed by a participant from Faizabad, who mentioned that: "We were in contact with four hospitals simultaneously" (P213). Hence, being able to learn from local experts in other locations was a perceived positive outcome of the eLearning programme.

#### Cost-effectiveness and sustainability

There was consensus that eLearning was a cost-effective way of offering training to a large number of nurses and midwives, thus enabling both participants and the organization to curtail expenses on the transport, accommodation, opportunity cost, and course fees. One programme leader stated:

If we are sending one person from Bamyan to Kabul and asking them to stay there for a couple of days, we are spending nearly \$2000. Instead of that, if we deliver four sessions through online sessions from [Kabul] to Bamyan, by paying the facilitator \$500, that would solve many issues and also train many health professionals rather than just one person (IL06).

Also, a participant (P213) from Faizabad mentioned that “[the] sessions were very useful and were free of expenses and traveling”. Thus, participants believed eLearning sessions were cost effective as people did not have to travel to attend face-to-face training in other locations.

The programme leaders considered eLearning critical for the growth and success of nursing and midwifery in Afghanistan. One of the identified strengths of the eLearning programme was that many donor agencies and institutions were interested in funding an eLearning programme in underserved and low-resource areas. A leader commented:

The programme is being funded by many donors from its inception, through Canadian Global Affairs, it used to be DFID; there are also other donors like USAID and MFA, French Ministry Foreign Affairs and AFD ... because they believe in e-health, they want to experiment in e-health and low and middle-income countries with low resource settings to see actually how technology can actually impact lives, build capacities and which will result in improved health care for people in these settings (IL05).

The leaders believed that there was no shortage of donor funding to support an eLearning programme. However, some leaders believed that with no official requirement for healthcare providers to complete CME in Afghanistan, the programme will not be sustainable without donor funding. Therefore, when reflecting on what they would change if they were to re-do this project, a leader commented:

I [would] do more preparatory work, create readiness and awareness ... work with the Ministry of Health in Afghanistan to see how we can really make a policy change so that it becomes mandatory for nurses and physicians to have a license to practice in this profession (IL05).

This same leader proposed charging institutions or the participants for eLearning-based ‘continuing nursing education’ (CNE) programmes, or advocating to the government to invest in the ‘continuous professional education’ (CPE) of healthcare workers. The leader suggested initiating a dialogue with the Ministry of Public Health in Afghanistan to set guidelines and standards for clinical practice of healthcare professionals working in MNCH. Collaboration with local governments and the Ministry of Public Health in Afghanistan was mentioned for long-term sustainability.

#### Administration and communication

The interview data highlighted a lack of clarity regarding the ownership, management, and organization of the eLearning programme. It proved to be administratively challenging for the facilitators to coordinate various activities and offer the sessions. The facilitators at Hospital A in Karachi shared that they were asked to design and offer sessions, but this information was not clearly communicated to the programme leaders in Kabul. This shift of roles led to confusion regarding the management of the programme. A nursing manager commented on this lack of clarity regarding coordination and contractual responsibilities:

.... since the start of the training programme, it was not clear who has signed the contract for conducting this eLearning programme.... It was very important for us to know about the parties involved at the time of signing the contract in order to have some information to follow up this training programme, cooperate with them, and assist them at all levels in the future (IL11).

Similarly, a facilitator commented on the challenges they faced due to a lack of the clarity in roles:

It is very important that [all participating organizations] are involved from the beginning. For example, pre- and post-tests that were designed in the given time, the topic that was decided, everything was pre-decided. We were asked to conduct. That becomes very challenging for somebody to fit into those shoes, though we tried our best. I don't know how effective we were, but I feel it is important to be involved from the beginning to make sure we can assess ourselves and then assess our contribution (IL001).

#### Course and curriculum factors

The course and curriculum factors relate to the content, the design and delivery of the programme, such as the language of instruction, teaching methodology, scheduling of the sessions, and facilitators' capacity. Each of these is discussed below.

##### Content

There was consensus between the organizational leaders and programme facilitators that one programme strength was the relevance of the topics. This finding was reiterated during consultations not only with the nurses and midwives but also with their clinical supervisors and head nurses. It is possible that assessment of learning needs contributed to this strength. A nursing manager stated:

We performed a needs assessment in two to three months and realized what kind of training is needed for a specific nurse. We also did an assessment of how much their knowledge increased, what are their needs, what kind of programme should be conducted for them, and what kind of training should be provided for them (IL11).

##### Language of instruction

The decision to offer the eLearning sessions in Dari, as the perceived preferred language, led to difficulties as many participants could not understand it readily. Participants noted that they had to struggle to understand the new content in a second language and were further challenged by English language PowerPoint slides. A nurse manager proposed: "... training [should be conducted] in Pashto for learners from the Kandahar province, because this way, the participants can learn topics quickly

and apply them to their daily tasks. We want the lessons to be translated to Pashto for participants” (IL11).

Facilitators also identified the language of instruction as an issue, specifically causing delays in what were already short sessions. A facilitator (IL002) stated: “[whatever the online facilitator said and the in-person facilitator interpreted], the learners [had to] take time to listen, comprehend, think and accept”. Another facilitator (IL001) perceived learners’ participation was minimal because of all the different languages being spoken as facilitators could not possibly translate into three different languages in a one-hour training session. To mitigate the issue of language, several participants expressed a desire to learn English to minimize misunderstandings between the participants and facilitator (P301, P303, P304, P306, P307, P309, P310, P312).

#### Teaching methods

The participants and facilitators criticized the use of lectures as the only teaching methodology in the eLearning programme. A participant from Faizabad noted: “There was no discussion and questions/answers. Time was less. There were problems with the internet. The facilitator’s [voice] was incomprehensible” (P208). There was no post-session support or access to session content. The participants and facilitators identified a lack of focus on skills development as a problem, with a head nurse noting that “If you just teach through eLearning and there is no one in the classroom to interpret and show the skills, then it becomes difficult” (IL10). Several participants mentioned that live demonstrations of skills and recorded tutorials would have been helpful in learning skills. Other teaching strategies recommended for inclusion were “role-playing and videos” and “discussion and questions/answers” (P202, P203, P205, P208, P210, P212).

#### Scheduling of sessions

The facilitators reported that logistics were challenging as the schedules of the participants from different sites, who were also engaged in clinical practice and work shifts, had to be taken into account. Due to staffing requirements, not everyone was able to attend these sessions as some were required to work in the wards. Participants and clinical supervisors suggested that future sessions should be scheduled to minimize staffing impacts on clinical work shifts during nurses and midwives’ absence.

#### Facilitators’ capacity for online teaching

The primary facilitator was selected because of their proficiency in Dari language. Though the facilitator was a trained nurse, they lacked expertise in MNCH and in online teaching. As a result, during the first two sessions, participants had difficulty understanding the facilitator. These gaps were improved, with feedback from participants and peers. A co-facilitator mentioned in the interview:

We would share feedback with [the facilitator] and ask [the facilitator], to speak slowly, because it was quite hard for the learners to understand [the facilitator] and comprehend the session... as time passed, [the participants] accepted [the facilitator] as a facilitator and things went very well. There was a drastic change in the evaluation feedback (IL001).

For future sessions, one participant from Bamyan recommended: “If the facilitator is a person who is familiar with nursing and midwifery, they will provide better and satisfactory answers to our questions” (P108). The findings suggest that not only is the content expertise of the online facilitator essential, but the capacity of the facilitator to engage learners, from multiple linguistic backgrounds, in a live online session is also critical.

### Individual factors

Individual factors such as the age, gender, location, attitude, beliefs, motivation for undertaking the training, cultural and professional responsibilities, and digital literacy could be important indicators of learner readiness (Rohayani & Sharipuddin, 2015). All participants were mid-career females and the personal/professional demands on the nurses’ and midwives’ time was an important consideration. The participants were motivated to improve their knowledge and skills to provide a higher standard of healthcare in their community. A participant from Faizabad reported her motivation to attend the eLearning sessions as follows: “[I want to] provide services to my people, especially those in my area. [I want to] provide services to a mother so she can be a healthy woman and have a healthy child, too, and I want to provide services to poor people” (P213).

Another participant shared their motivation as: “My plan is to improve my educational level and provide better services to my countrymen” (P207). A nursing manager mentioned strategies used to motivate the staff to engage in professional learning:

We evaluated all the staff’s performances, prepared separate files, wrote down the details of the eLearning participants’ [involvements] ... if needed, we distribute letters of appreciation to the staff that performed their duties and responsibilities well (IL11).

These excerpts suggest that nurses and midwives from the four sites were motivated to engage in continuing education in MNCH. Many participants reported a desire to serve their country and support their community by engaging in future eLearning programmes and recommending such programmes to their colleagues and peers. The leaders and managers mentioned ways in which individual motivation could be improved, such as through regulatory shifts making CNE compulsory.

### Technology factors

There were issues and challenges related to connectivity, which remained an ongoing struggle for the programme planners and implementers. An eHealth coordinator and ICT manager reported that the connectivity issues were because of the poor IT infrastructure in Afghanistan (IL07) and that the “connectivity issues had an effect on the learner participation” (IL02). A facilitator noted that sometimes connectivity interruptions were such that sessions were delayed, or even repeated at a later date for certain sites who were unable to connect: “problems with connectivity were a big challenge sometimes, some people were not able to join in some sessions, so it was then arranged for them at a separate time” (IL002). Even though the sessions were planned for an hour, the technical set-up and connectivity issues often consumed up to 20 minutes of the session, which left inadequate time for the facilitator to complete the content, and for the learners to ask questions or engage in discussion afterwards. A nursing manager recommended that “improvements in this area are very

important, because once this issue is resolved, we won't have to postpone the training just because we don't have access to the internet" (IL11).

However, divergent opinions were heard on this matter. An organizational leader and facilitator believed that connectivity was not a big issue: "[W]e have setup proper infrastructure for [the eLearning programme]. It may need some improvements, but I think the infrastructure is well established" (IL08) and "I understand the limitation of technology, but that [connectivity] was not a major challenge" (IL001).

Another issue was a lack of skilled ICT personnel in Afghanistan that made it challenging for the technical team in Karachi to remotely troubleshoot hardware, software, or connectivity issues before or during the sessions. It was noted by the programme implementers that for each one-hour session, an additional hour was needed to prepare for the session by the local ICT support teams. The team in Karachi remotely monitored connectivity during the session.

## Discussion

The results highlight four factors that contributed to the successes and challenges of the eLearning programme. There was consensus amongst the programme leaders and implementers that the topics were relevant to the needs of the nurses and midwives in the three locations. The teaching approach was lecture-based, where the facilitator shared pre-prepared PowerPoint slides with the participants, with time for questions and answers, but not enough time to engage in discussion or to practice clinical skills and give practical demonstrations. The time allotted for each session did not allow for interactive activities, or for demonstrating skills that the learners could apply in clinical practice. The facilitators reported that the duration of sessions was insufficient, considering the quantity and intensity of the content. Though the sessions were planned for an hour, the technical set-up and connectivity issues often consumed up to 20 minutes of the session, which left inadequate time for the facilitator to present the content, and for the learners to ask questions or engage in discussion. Within the current study, it was not made apparent why didactic, one-hour sessions were included as the primary pedagogy used in the programme. Moreover, the challenges noted in language, session duration, and lack of clinical applications could likely have been anticipated and potentially addressed in advance. During this study, we did not learn how the planning of the programme was done and how decisions were made prior to implementation of the eLearning sessions.

Cook, Levinson, Garside, Dupras, Erwin & Montori's (2010) review of web-based learning in health professions education noted that the use of virtual scenarios, discussions, interaction between learners and facilitators, and feedback contribute to the success of eLearning courses. Moreover, Kala, Isaramalai & Pohthong (2010) found that learner-centered nursing programmes are more effective in establishing knowledge and skills where social interaction and collaboration are encouraged, rather than traditional teaching approaches which are underpinned by the assumption that learners are passive partners in the teaching-learning context. There is substantial evidence that interactive approaches are more effective as compared with didactic teaching. Active learning strategies, such as the ones suggested by the study participants (e.g. role-playing, video tutorials and live demonstration), can be utilized to mitigate the effects of the didactic approach. Furthermore, online tools, such as discussion forums or blogs, can facilitate communication between participants and instructors to

encourage the exchange of ideas, opportunities for enquiry and clarification, and dialogue amongst diverse participants, to encourage learning and reduce social and professional isolation (Lewis & Cunningham, 2016).

To enhance the quality of learning, critical questions can be designed that invite various perspectives, innovations, and conceptual approaches on the part of learners, while encouraging reflective and critical thinking that draws learners into the theoretical and practical implications of session content (Mitchell, de Lange & Moletsane, 2016). Easy access to content by nurses and midwives using different modes (e.g. videos, audio) and devices (e.g. smart phones) in the wards and in the clinics could encourage self-initiated and self-directed learning (ibid). The current eLearning programme did not require learners to purchase their own devices or to download large files or videos when accessing session content. These were also limiting factors, as not having access to personal devices or post-session content curtailed participants' engagement with the content as well as experts and peers outside the classroom. Providing on-going access to the content on computers or mobile devices in the wards and/or clinics, or through participants' mobile phones, could open more avenues for learning.

In the online learning context, the role of a facilitator is as important as it is in face-to-face learning (Dhillal, 2017). In the current study, we found that the facilitator did not receive any prior training regarding online teaching which could have been the reason for their overreliance on didactic methods and missed the opportunity to engage learners in interactive learning. Berge (1995) identifies four critical roles for an online facilitator: pedagogical, managerial, social, and technical. An online facilitator requires moderation skills and capacity enabling skills to encourage the development of higher order skills amongst participants. Thus, eLearning facilitators need necessary mentoring or coaching to develop, practice, and implement appropriate online teaching skills.

Participants' motivation, including the desire for increased professional competence and improved professional knowledge and skills, plays a significant role in the overall success of institutional CPD initiatives (Waddell, 1993; Yoshioka-Maeda, Katayama, Shiomi & Hosoya, 2018; Inamorato, Gaušas, Mackevičiūtė, Jotautytė & Martinaitis, 2019). Literature also shows increased motivation in eLearning contexts (Harandi, 2015). Consistent with these findings, in the current study, participants demonstrated a high motivation in the eLearning programme to improve their knowledge and skills. For the mid-career professionals, the eLearning programme enabled development of their knowledge and skills without having to leave their families to attend training in other cities. However, it is important to note that an individual's engagement with CPD is dependent on that professional's ability to learn, their cognitive style, and not merely their motivation to participate; therefore, while investigating individual factors is useful, these need to be studied in relation to other contextual factors (Fergusson, Allred & Dux, 2018).

Issues of poor bandwidth and network connectivity were noted in the study. Though participants' readiness may be affected adversely by a lack of digital literacy, in this study, since participants attended eLearning sessions in a classroom setting, no specific digital literacy was needed. Though connectivity issues and lack of trained IT staff may be anticipated in remote and rural areas, these can be mitigated by training local technical staff and by establishing stronger connections through satellite

internet in conjunction with local telecommunications authorities in the country (Durrani, Naseem, Scott, Gul, Jan & Khoja, 2012; Khan, 2019).

Awidi & Cooper (2015) outline various challenges involved in implementing eLearning programmes between hub and spoke sites in Africa, with a particular focus on direct communication between organizers regarding pedagogical goals, infrastructural requirements, collaboration between stakeholders, quality control, technical support, budgeting and funding, and resource planning. They further note that the power dynamic between institutions, and the readiness and ownership of programmes, directly affect pedagogy. We noted challenges in this study in the form of perceptions of a communication gap between programme implementers, facilitators, and leaders. For example, the change from Kabul-based to Karachi-based facilitators was not clearly communicated to everyone involved, which led to challenges in the implementation phase. Additionally, coordination between multiple sites in two countries proved challenging, due to an absence of clear communication, poor connectivity, time differences, and the capacity of local technical and administrative personnel. This was evidenced in the remarks of clinical managers and head nurses who reported that logistic and administrative discussions were being held at the hub site without their input. Taking measures to ensure that the quality of sessions is not adversely affected by administrative and communication deficiencies can enhance the effectiveness of a multi-country eLearning programme.

The financial sustainability of eLearning in Afghanistan remains a challenge and an unanswered question. The initiation and establishment of eLearning programmes requires financial investment along with administrative and logistical support, particularly in the early years. In this study, funding from an international donor agency enabled the establishment of the programme. Though the programme leaders believe that there is no shortage of funds to continue the programme at present, donor dependence could become a barrier in the long run. Given the general unreliability of support from international donor agencies and government's limited understanding of and commitment to eLearning, it is unlikely that donors will be available to provide endless support for such initiatives. There is an acknowledgement on the part of some beneficiaries of the eLearning sessions that the availability of eLearning is valuable, and that attention should be given to sustaining the programme.

The programme leaders highlighted the need to initiate a discussion with the government on the importance of continuing education for health providers and address the issue of the sustainability of the eLearning programme. Accreditation by public healthcare and education bodies in Afghanistan requires continuous professional education. When mandatory, CNE potentially adds value to clinical practice, advances professional status and credentials, and builds clinical and theoretical knowledge. In such a context, practitioners are more likely to engage in professional development courses, as evidenced by a study from China on continuing education practices for nurses (Ni, Hua, Shao, Wallen, Xu & Li, 2014). Earning these academic credits however, must be based on merit and effort rather than mere attendance without dynamic participation and involvement.

## Conclusion

This study underscores the importance of acknowledging sociocultural and context-specific factors in the design and implementation of eLearning programmes. When the availability of technical resources, such as stable internet connectivity in rural areas and the availability of human resources

are limited (e.g. trained facilitators and local clinical and technical managers), innovation becomes necessary. Such innovation can be channelled through the facilitator's online teaching approach, professional development of programme facilitators and learners in teaching and learning online, and the programme donors' and implementers' strategies for resource allocation, leadership, coordination and programme management. Collaboration between local governmental, educational authorities and external educational and funding bodies is critical for developing sustainability within eLearning in healthcare in Afghanistan.

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