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Original Article

Assessment of institutional related challenges and prospects to implementation of e-learning midwifery curriculum in Nursing and Midwifery training institutions in Uganda: A Cross-sectional study.

Kenneth Bigabwa[1*] , Nyandara Zam Zam[2] , Prisca Mbogo[2]
[1]Uganda Health Professions Assessment Board
[2]Open University of Tanzania

Background:
Uganda's Ministry of Education and Sports, through the BTVET Directorate, aims to implement e-learning for midwife training. The study aimed to identify challenges and prospects to the effective implementation of e-learning midwifery curriculum in Nursing and Midwifery Training Institutions in Uganda, and propose strategies for effective implementation.

Methods:
Based on the Technology Acceptance Model, a cross-sectional study utilising a mixed methods research approach and pragmatist paradigm was conducted across 12 Nursing and Midwifery Training Institutions in Uganda, involving 52 Health Tutors, 11 Principals, and 152 students of the e-learning midwifery program. Data were collected using questionnaires, interview guides, and checklists, and were analyzed with SPSS (21.0) to generate descriptive statistics.

Results:
The study revealed that financial difficulties majorly hinder the effective implementation of the e-learning midwifery curriculum in Uganda. Key findings include 68.4% of respondents viewing class-time usage as ineffective, 61.2% cited inadequate staff commitment, lack of necessary resources such as curriculum copies (77%), updated work schemes (58%), and lesson plans (62%). Additionally, 92% of institutions lack active e-library systems, 52% lack online learning platforms, and 85% have no implementation and monitoring plans. However, experienced tutors, balanced institutional ownership, and a conducive learning environment present prospect for improvement dependent on enhancing ICT infrastructure.

Conclusion:
Uganda's e-learning midwifery curriculum implementation faces challenges like insufficient funding, poor teacher preparation, limited digital resource access, and inadequate infrastructure. However, the presence of experienced Health Tutors, Self-Motivation among students, and a supportive learning environment suggest opportunities for enhancement.

Recommendations:
Funding and scholarships for e-learning midwifery trainees, regular curriculum review and availability, strategies for effective use of class time, flexible tuition payment policies, e-platforms and e-libraries, and adherence to schemes of work can ensure successful and effective implementation of the e-learning midwifery curriculum in Uganda.

***Key terms*:** *Curriculum, E-Learning, Midwifery, Implementation, Health Tutors, Trainees, effective, efficient*
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Corresponding author: *Kenneth Bigabwa*
Email: ***bigbawakenneth16@gmail.com***
Uganda Health Professions Assessment Board, Open University of Tanzania

Background
Scientific and technological developments are transforming the terrain of higher education into a global context. These modifications also compel higher education institutions to include transformative learning opportunities in their curricula (Akar, 2023). The global adoption of e-learning has surged due to its numerous benefits, propelled by rapid advancements in ICT. UNESCO recognizes e-learning's potential impact, with many countries already integrating it into their systems, yielding positive outcomes in accessibility, affordability, and learning outcomes (UNESCO, 2020). E-learning leverages technology to facilitate remote access to educational materials, offering self-paced learning, personalized instruction, and broader student reach.

African countries have launched initiatives to promote e-learning, recognizing its potential to enhance access to education, improve teacher training, and foster innovation in pedagogy. A study conducted in Rwanda found that e-learning encourages self-directed learning, with participants reporting that self-directed learning comprises 60% of their academic year and allows students to learn independently by conducting research from various websites and other resources (Harerimana et al., 2016).

Uganda, like many African nations, faces challenges in its education system, particularly in the healthcare sector, where there is a shortage of skilled midwives. The implementation of e-learning in the midwifery curriculum involves integrating digital technologies and resources to enhance midwifery education across the country (Agarwal & Mishra, 2020).

This study aims to identify challenges that hinder effective implementation of e-learning curriculum in Uganda and contribute to existing knowledge on e-learning implementation strategies while providing recommendations for stakeholders in the education sector.

Materials and Methods

Study Design

The study applied a mixed-methods research design, which involves collecting and analyzing both qualitative and quantitative data in a single study. This design facilitates triangulation of quantitative and qualitative data to ensure the validity and reliability of the study findings. Following participant selection, the study conducts the inquiry to assess exposure and outcomes simultaneously (Eom, 2015), hence enabling investigation of relationships between these variables.

Study Setting

The study was conducted in twelve (12) Nursing and Midwifery Training Institutions that offer midwife training through e-learning in Uganda. These institutions include government-aided and Private Not-for-Profit (PNFP)/Faith-based organizations, and were selected because they present an appropriate environment with authentic information required for this study.

Table 1: List of Health Training institutions offering e-learning midwifery program and their location

Training Institution	Location
Arua School of Comprehensive Nursing	Arua City
Jinja School of Nursing and Midwifery	Jinja city
Kabale School of Comprehensive Nursing and Midwifery	Kabale Municipality
Kagando School of Nursing and Midwifery	Kasese District
Lira School of Comprehensive Nursing & Midwifery	Lira city
Lubaga Hospital Training Schools	Lubaga Kampala City
Masaka School of Comprehensive Nursing	Masaka City
Mengo School of Nursing and Midwifery	Mengo Kampala City
Mulago School of Nursing and Midwifery	Mulago Hospital, Kampala City
Public Health Nurses' College	Kyambogo, Kampala City
Soroti School of Comprehensive Nursing	Soroti City
St. Francis Hospital Nsambya Training Schools	Nsambya Kampala City

Notably, three (3) of the twelve institutions that initially implemented the e-learning training program have discontinued it, and 114 (90.5%) of all nursing and midwifery training institutions have never attempted to implement e-Learning curriculum despite the Ministry of Education's approval. This status quo prompted the study to investigate the underlying causes.

Study Population

The study population comprised 52 Health Tutors in Nursing and Midwifery Training Institutions as key stakeholders in the midwifery program, alongside 152 students pursuing the e-learning program. These target groups were selected because of their deep involvement in e-learning curriculum implementation over a reasonable time period, providing them with relevant information to ascertain implementation challenges. Additionally, eleven (11) Principals of Nursing and Midwifery Training Institutions and officials from the Ministry of Education and Sports were engaged as key informants.

Sample Size Determination

The study considered two population clusters as key stakeholders in the e-learning program. Nursing and Midwifery training institutions were the entry point for the study. Students on the e-learning program and the Tutors in these institutions formed the first and second population groups. There are twelve Nursing and Midwifery training institutions offering the e-learning program in Uganda, as shown in the table below. All these were considered for the study. The sample size for Health Tutors and students to recruit into the study was determined by the Yamane formula, n = N/(1+N(e)2

Considering that the total population of Health tutors in Nursing and Midwifery Training Institutions offering e-learning programs is 121, by substituting the Yamane formula

N=121

n=sample size

e= degree of error = 0.05

121/1+121(0.052) =92.8

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However, a total of 52 Health Tutors were recruited into this study, depicting a response rate of 56%. The total student population pursuing the e-learning program is 291; based on the Yamane formula, 168 students will be recruited into this study. A total of 152 students pursuing e-learning midwifery programs were recruited, hence a response rate of 90.5% in this study.

Sampling Strategy

Nursing and Midwifery Training Institutions implementing e-learning programs at the time of the study were purposively sampled as an entry point to reach students and tutors. The total population of tutors and students was established from the Principals of these institutions and subjected to the Yamane formula to determine the sample size of participants for the study.

Probability Proportional to Size (PPS) sampling (Skinner, 2016) was used to select proportionate sample sizes of students and tutors from each selected training institution, while simple random sampling was employed to select individual participants from the determined sample.

According to UNMEB records from June 2023, there were 12 Principals, 121 Health Tutors, and 291 students pursuing the e-learning midwifery program across all training institutions offering it. Based on the Yamane formula, a sample of 93 Health Tutors and 168 students was recruited for this study.

Scope

The study aimed to assess factors influencing the adoption of e-learning in Uganda's midwifery curriculum and recommend strategies for successful implementation. It focused on student-related, institutional-related, and curriculum-related factors affecting the e-learning curriculum in Nursing and Midwifery training institutions in Uganda and was conducted between April 2024 and September 2025.

Eligibility Criteria

The study included all Principals, Health Tutors, and students pursuing the e-learning midwifery program in Nursing and Midwifery Training Institutions assessed by the Uganda Nurses and Midwives Examinations Board. All participants who provided informed consent before recruitment. It also included all accredited health training institutions in Uganda offering an e-learning midwifery programme, and with participation approval from their Principals.

Data Collection Tools

Questionnaires

Pre-designed self-administered questionnaires collected quantitative data from Health Tutors and Students. This method was selected because it enables swift data collection from large numbers of respondents while allowing systematic evaluation of responses (Mugenda, 1999).

Closed-ended, structured questionnaires used a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). This format was chosen for its simplicity in understanding and quantification, compatibility with mathematical analyses, and ease of coding responses.

Interview Guide

Semi-structured interview guides facilitated in-depth qualitative data collection from Principals and Ministry of Education and Sports officials. These key informants were selected for their extensive expertise and knowledge, providing collaborative information to supplement data from tutors and students while enabling clarification of responses.

Observation Checklist

Observation checklists determined the availability of key documents facilitating effective e-learning midwifery curriculum implementation, including curriculum copies, schemes of work, lesson plans, student attendance records, and field/clinical ward placement documentation for practical.

Data Collection Procedure

The study employed a mixed-methods approach consisting of interviews, focus group discussions, observations, and document reviews.

Interviews were conducted as in-depth, qualitative conversations with individuals having first-hand experience with the research problem. Key informant interviews were held with Principals and Ministry of Education officials. Each interview lasted 10-20 minutes to maintain participants' concentration and attention. A trained research assistant supported the data collection process, with interviews scheduled during break/lunch hours and after work.

Focus Group Discussions enabled data collection in participants' preferred language, with moderators facilitating clarification on follow-up questions to gather rich, detailed information and build rapport with participants.

Observation Methods using checklists promoted transparency and minimized the risk of human errors and bias in data collection.

Data Analysis

Qualitative Data Analysis

Data was analysed using a thematic approach involving audio data transcription, generation of descriptive codes and themes, alignment of codes under respective themes, identification of linkages and meanings, and report writing. The theme was Institutional factors (Subthemes: infrastructure and technical challenges; financial challenges).

Quantitative Data Analysis

Numerical data were entered and analysed using SPSS (21.0), generating descriptive statistics including mean, standard deviation, percentage, and frequency for study variable dimensions.

Quality Control Measures

Validity and reliability concepts were utilized to assess research quality (Chatti et al., 2020). Validity concerns measurement precision, while reliability addresses consistency. Both promote transparency and enhance qualitative research opportunities (Etikan, 2016).

Validity

Validity expresses the degree to which a measurement actually measures what it claims to measure. The study employed face validity, construct validity, content validity, and criterion validity tests. Internal validity assessed how accurately research measures quantified their intended constructs, while external validity evaluated how well the study sample represented the reference population.

To establish instrument validity, questionnaires were submitted to experts for evaluation of item relevance to objectives and credibility assessment. The Content Validity Index (CVI) was computed as:

CVI = Number of items rated relevant by all judges ÷ Total number of items in the research instrument

A CVI value of at least 0.7 was considered valid for the study (Kirsten & Greefrath, 2022).

Reliability of Research Instruments

Internal consistency of responses was assessed through reliability testing to determine whether questions were understandable across a wide spectrum of respondents. Cronbach's Alpha Coefficient was computed using SPSS. According to (C.Nunnally, 1978), Cronbach's Alpha reliability statistics above 0.7 indicate satisfactory internal consistency.

Ethical Approval

The Open University of Tanzania provided an introductory and clearance letter on 16th April 2024. The letter was presented to the Principals of Nursing and Midwifery Training Institutions for study approval. Respondents were informed about the study purpose, expected information, confidentiality and anonymity assurances, and their right to withdraw. Informed consent was obtained before participant recruitment. Privacy was assured, with data collected strictly for this study and not used elsewhere without due consideration of participant privacy.

Mitigation of bias

To mitigate selection bias, the study incorporated midwifery training institutions from various ownership categories in order to ensure diverse representation. Participants, including health tutors and students involved in e-learning, were selected with clear criteria to provide balanced views. Standardized data collection tools were applied to minimize information bias, while objective analyses limited researcher bias. Quantitative data were processed using standardized statistical methods; qualitative data underwent thematic analysis for consistency. Contextual factors were considered to reduce confounding bias, and acknowledging limitations enhanced the study's credibility.

Results

Participant flow

A total of 12 midwifery training institutions offering or expected to implement the e-learning midwifery curriculum in Uganda were identified as potentially eligible for the study. From these institutions, 93 health tutors and institutional administrators, and 168 were approached for participation. A total of 273 potential participants were approached. However, A total of 204 potential participants were included in the study based on predefined inclusion criteria, including direct involvement in teaching or managing e-learning midwifery curriculum. Sixty-nine potential participants were excluded due to a lack of involvement in e-learning activities and refusal to provide informed consent. All the 204 participants who completed data collection were included in the final analysis, as their responses met the required completeness and quality criteria.

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Figure 1: The flow diagrams showing participant recruitment eligibility assessment, inclusion, and final analysis

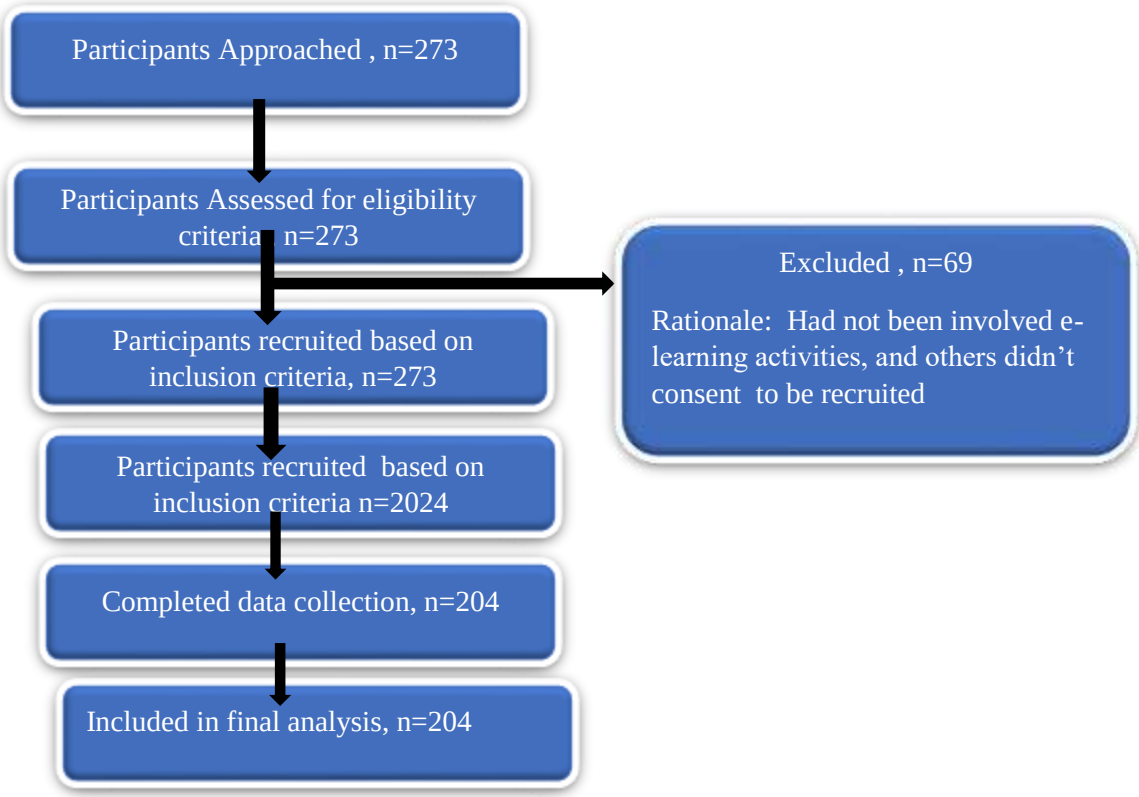

Table 2: Socio-Demographic Characteristics of Respondents

Variable	Students (N=152)	Staff (N=52)
Gender	Female: 152 (100%)	Male: 12 (23%) Female: 40 (77%)
Age in years	18–24: 7 (4.6%), 25–34: 132 (86.8%), 35–44: 13 (8.6%)	25–34: 8 (15%) 35–44: 24 (46%) 45–54: 18 (35%) 55–64: 2 (4%)
Previous qualification Occupation	Cert. in Nursing: 6 (3.9%), Cert. in Midwifery: 143 (94.1%), Cert. in Comprehensive Nursing: 3 (2%)	Midwifery Tutor: 26 (50%) Nurse Tutor: 22 (42%) IT Staff: 4 (8%)

Years of teaching experience	Not applicable	1–4 yrs: 8 (15%), 5–9 yrs: 18 (35%) 10–14 yrs: 14 (27%) ≥15 yrs: 12 (23%)
Ownership of Institution	Government-aided: 67 (52.3%) Private Not-for-Profit: 61 (47.7%)	Government-aided: 28 (54%) Private Not-for-Profit: 24 (46%)
Engagement in e-learning activities	Daily: 3 (2%) Weekly: 35 (23%), Monthly: 114 (75%)	Daily: 6 (12%) Weekly: 17 (33%) Monthly: 29 (56%)

Source: Field Data (2024)

Institutional-related Challenges and Prospects for Implementation of e-Learning Midwifery Curriculum

This section addresses Institutional-related challenges affecting the implementation of e-learning midwifery curriculum in Nursing and Midwifery training institutions in Uganda. The most prominent institutional barrier identified was the lack of access to an online platform for off-campus learning, reported by 62.5% of respondents. This absence was further compounded by limited opportunities for regular tutor–student review meetings (55.9% disagreed that these were supported). Ineffective use of class time emerged as another substantial challenge, with more than two-thirds (68.4%) indicating that scheduled hours were not maximized for learning.

While over half agreed that computers and reliable internet were available (52.0%), qualitative responses revealed disparities between institutions, with some students reporting unstable connectivity, outdated devices, and limited computer lab access during peak hours. This aligns with concerns over uneven ICT infrastructure across government-aided and private not-for-profit schools.

Tutor availability (59.2%) and sufficiency of teaching materials (57.9%) were generally rated positively. However, timeliness and adequacy of feedback from tutors split opinions evenly, suggesting inconsistent communication practices. A significant 61.2% perceived a lack of staff interest and commitment to using e-learning effectively, with qualitative remarks citing resistance to change, inadequate digital skills among some tutors, and competing workload demands.

On the positive side, the vast majority of respondents believed e-learning is a good approach for midwifery education (82.2%), and 75% found the school environment conducive to learning. Access to the e-learning curriculum was high (80.3%), and student–tutor relationships were largely constructive (75.7%). See Table 3.

Table 3: Institutional-related Challenges and Prospects for Implementation of e-Learning Midwifery Curriculum

Variable	Disagree n (%)	Neutral n (%)	Agree n (%)
Computers and reliable internet are available to support e-learning	43 (28.3)	30 (19.7)	79 (52.0)
The school provides sufficient teaching and learning materials for e-learning	34 (22.4)	30 (19.7)	88 (57.9)
Availability of tutors is adequate to support e-learning	35 (23.0)	27 (17.8)	90 (59.2)
Students have access to copies of the e-learning curriculum	17 (11.2)	13 (8.6)	122 (80.3)
Student–tutor relationships facilitate effective learning	13 (8.6)	24 (15.8)	115 (75.7)
Students receive timely and adequate feedback from tutors	38 (25.0)	38 (25.0)	76 (50.0)
Class time is used effectively	104 (68.4)	—	48 (31.6)
Clinical/practicum placements are conducted on time	39 (25.7)	27 (17.8)	86 (56.6)
Overall satisfaction with the quality of tutor training	35 (23.0)	21 (13.8)	96 (63.2)
The school environment is conducive to e-learning	18 (11.8)	20 (13.2)	114 (75.0)
Lack of staff interest/commitment to use e-learning is a challenge	59 (38.8)	—	93 (61.2)
Communication with tutors off-campus is effective	39 (25.7)	30 (19.7)	83 (54.6)
E-learning is a good approach to teaching midwives	7 (4.6)	20 (13.2)	125 (82.2)
The school has an online platform for off-campus learning	95 (62.5)	—	57 (37.5)
The school supports regular tutor–student meetings to review progress	85 (55.9)	—	67 (44.1)

Source: *Field Data (2024)*

Class Time Utilization

A substantial 68.4% of respondents indicated that class time was not used effectively by both tutors and students. This inefficiency was often attributed in qualitative interviews to delays in starting sessions, prolonged administrative tasks, and over-reliance on theory with minimal integration of online tools. From a TAM perspective, poor time management lowers perceived ease of use, as students may feel their effort in attending is not matched by productive learning.

Staff Commitment to E-Learning

About 61.2% of respondents agreed that lack of interest and commitment among teaching staff posed a challenge. Principals cited resistance to change, limited digital competence, and competing workloads as reasons. This negatively impacts both ease of use (as reluctant staff are less likely to support students) and perceived usefulness (as underutilized platforms fail to demonstrate value).

Access to an Online Learning Platform

Access to an institutional e-learning platform was absent for 62.5% of respondents. Instead, many institutions relied on ad-hoc tools such as Zoom for synchronous sessions without structured content repositories. This represents a core infrastructure gap that limits off-campus engagement and diminishes ease of use.

Regular Tutor–Student Review Meetings

Only 44.1% reported that regular review meetings between tutors and students were supported. The absence of consistent feedback loops hampers both academic monitoring and student motivation, reducing perceived usefulness by weakening the link between e-learning engagement and learning outcomes.

Availability of Active E-Libraries

Active e-libraries were absent in 92% of institutions, depriving students of readily accessible reference materials and up-to-date resources. This severely constrains the perceived usefulness of eLearning, as students cannot easily complement lectures with self-paced research.

Availability of Schemes of Work

Updated schemes of work were missing in 58% of cases, and lesson plans were unavailable in 62% of institutions. Without these guiding documents, teaching may lack structure and alignment with the e-learning curriculum, which undermines perceived usefulness.

Document and Resource Gaps

Copies of the e-learning curriculum: 77% reported not having them, despite high agreement in Table 3 suggesting discrepancies between policy provision and actual access at the point of need. Implementation and monitoring plans: Absent in 85% of institutions, limiting the ability to systematically track the adoption and improvement of e-learning. See figures 2 and 3.

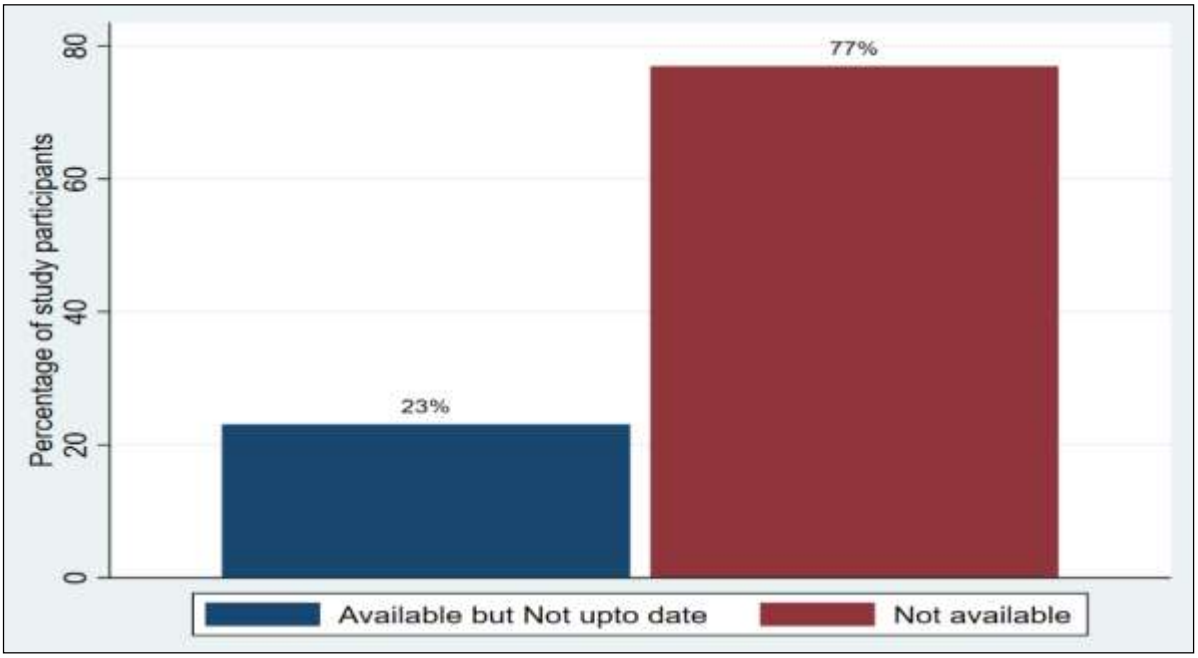

Figure 2: Possession of a copy of the e-learning Midwifery Curriculum
Source: *Field Data (2024)*

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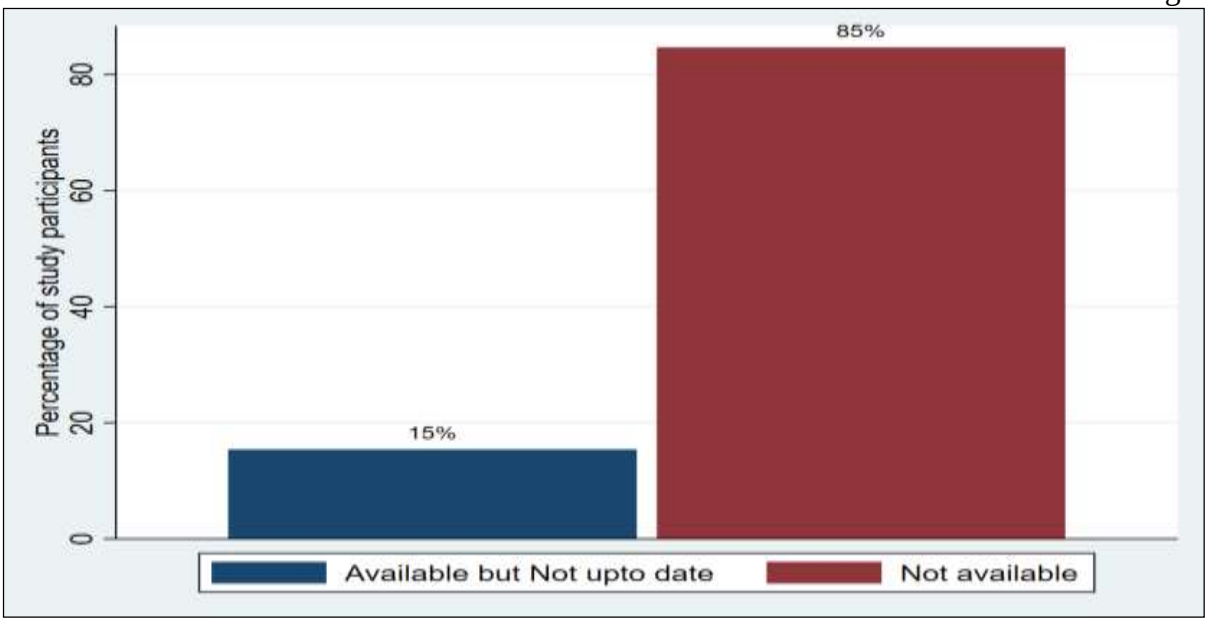

Figure 3: Presence of Implementation and Monitoring Plan

Qualitative Findings

Qualitative findings reinforced quantitative results for objective one, stressing three key themes: infrastructure and technology challenges, financial challenges, and prospects for curricula implementation.

Infrastructure and technical challenges

Infrastructure gaps for students from rural settings frequently report erratic internet and insufficient computers. Inconsistent support structures in some schools, a lack of dedicated ICT support staff, and inadequate training for tutors hindered smooth platform use. Cultural and attitudinal barriers, such as some tutors being perceived as reluctant to shift from traditional teaching methods, lead to limited integration of e-learning tools during class time.

"We depend on online classes through Zoom. We have no designed platform for an eLearning program. Online classes and face-to-face sessions lasting 1 week per month, and the semester is 4 months, hence 4 weeks per semester" (Principal 2)

"Network connectivity was another challenge for us, especially in the rural setting" (Principal 04)

"The equipment to facilitate training eLearning was inadequate. You know the program relied on AMREF, and when they pulled out, we got stuck" (Principal 05)

Financial challenges

The qualitative interviews from principals revealed these patterns, attributing them to financial constraints, withdrawal of donor support (e.g., AMREF), network challenges, and lack of technical equipment, challenges of tuition, facilitation of trainers and supervisors, and pulling out of donors.

"Tuition is a challenge for most trainees because they initial though the program is sponsored. This is because initially, the program was sponsored by AMREF, which later halted. Subsequently, the Number of interested candidates is reducing due to the lack of school fees" (Principal 01).

"The training is not cost-effective because facilitation of trainers to supervise trainees in the practicum areas is costly versus the tuition paid. (Principal 02).

"The trainees expected to be sponsored because initially the program was sponsored by AMREF, which later pulled out…when we increased school fees, most of the trainees dropped out…We didn't receive any support from the MoES to run this program …." (Principal 3, 4, and 5)

Prospects for curriculum e-learning midwifery implementation

Potential for peer learning was noted; students suggested leveraging peer-assisted digital learning sessions to compensate for limited tutor availability. Key informants revealed that many students apply for the E-Learning diploma program, which has benefits of keeping midwives up-to-date in practice while working at the same time. Few candidates applying for DME were diminishing due to a lack of study leave, hence the eLearning was adopted to address this challenge/gap. Administratively, the school has a platform, which students use while off campus.

"Number of students applying for Diploma in Midwifery Extension (DME) was many and school could not accommodate all, so we started eLearning to provide an opportunity for those who would be left out DME..... to keep the midwives updated as they practice and retain their jobs since the employers were not giving them an opportunity of study leave…. it was meant not to leave a staffing gap in the health facilities" (Principal 01)

"We thought it was good for midwives who wish to continue working and study at the same time, yet their employers couldn't

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grant them study leave," stated the fourth respondent (Principal 04).

Aligning with the TAM model

Perceived Ease of Use (PEOU)

Challenges: Limited access to an online learning platform (62.5%), inadequate regular progress review meetings (55.9%), and ineffective use of class time (68.4%) all reduce the perceived simplicity of engaging with e-learning. Lack of timely feedback (50% reporting inadequacy) and unstable ICT infrastructure further undermine ease of use. Perceived ease of use is hindered by the absence of a stable, well-structured online platform, unreliable class time management, and a lack of routine review meetings. Even if students are willing to engage in e-learning, the systems they must navigate are fragmented and inconsistent.

Prospects: Access to e-learning curriculum copies (80.3%) and a conducive learning environment (75.0%) enhance usability. Good student–tutor relationships (75.7%) also support smoother navigation of digital tools.

Perceived Usefulness (PU)

Challenges: Inconsistent Health Tutor engagement (61.2% citing lack of interest), underuse of scheduled time, and weak integration of e-learning into core instruction may reduce the perceived benefits. Perceived Usefulness suffers from missing key teaching documents, absent e-libraries, and limited staff commitment; even when platforms exist, their contribution to skill development is suboptimal.

Prospects: Strong endorsement of e-learning as a teaching approach (82.2%) and overall satisfaction with tutor training quality (63.2%) reflect recognition of its potential value when well implemented.

Principals also identified positive prospects such as the program's ability to reach working midwives who cannot take study leave, which indicates that if infrastructural and commitment issues are addressed, both ease of use and perceived usefulness could be significantly enhanced.

Discussion

The results revealed substantial institutional challenges, notably the absence of online platforms for off-campus learning (reported by 62.5% of respondents), irregular review meetings between tutors and students (55.9%), and ineffective use of class time (68.4%). These issues reduce Perceived Ease of Use by limiting access, interaction, and the structured delivery of online learning. Further, unavailability of copies of e-learning midwifery curriculum and schemes of work was a notable challenge (Rudhumbu, 2022) argues that to improve their teaching quality, raise student engagement, monitor class activities and improve their assessment methods, teachers must design and implement lesson plans in the classroom using theory-based lesson plans. Notably, Chatti et al. (2020) agree with the findings of this study through their assertion that appropriate teaching and learning materials are a foundation for effective e-learning and positively impact student engagement and learning outcomes. This implies that without schemes of work and lesson plans, the quality of implementation of e-learning midwifery in Uganda is compromised.

Qualitative findings reinforced these gaps, with principals citing unstable internet connectivity, shortages of equipment, and withdrawal of donor support (e.g., AMREF) as root causes. A significant lack of staff commitment (61.2% agreement) further emerged as a critical barrier, reflecting attitudinal and capacity constraints. The findings are in line with those of Tarus et al. (2025) and Tarus & Gichoya (2015), who found that there is a lack of interest and commitment among the teaching staff to use e-learning. Similarly, Konstantinidis et al. (2022) highlight the critical role of time as a resource in the teaching-learning process by asserting that allocation of time away from direct teaching can impact the depth and effectiveness of the learning experience. These findings underscore critical barriers to the successful implementation of e-learning midwifery curriculum since class-time usage and commitment among staff are critical in effective curriculum implementation.

Lack of an e-library and online platforms for accessing learning content by midwifery students while off-campus is a challenge since these are key platforms through which students would acquire information to complement the tutor's content. Previous studies also note that adoption of e-learning curricula was hindered by a lack of proper e-learning infrastructure for information and communication technology (ICT), and constantly changing technologies (Kibuku, 2023).

Similarly, inadequate ICT e-learning infrastructure, insufficient computer resources, and a lack of operational e-learning policies were key challenges to the implementation of e-learning curriculum(Barone & Wright, 2020; Tarus et al., 2015). (Young et al., 2014) who maintains that e-learning platforms have statistically significant effects on the learning interests of the students, while Ronzon et al. (2025) assert that organizational and administrative processes play a crucial role in effective curriculum implementations. A related study emphasized the importance of monitoring, supervision, and professional support for teachers. (Gautam, 2015; Nompumelelo, 2016).

Qualitative data from the nursing and midwifery students equally brought out financial challenges, resource constraints, and the cost of training as a major hindrance to the implementation e-learning midwifery curriculum. Similar findings are reported by other studies (Adepeji, 2019; Gautam, Singh et al., 2020; Rudhumbu, 2022; Waiswa, 2020).

However, prospects were also identified include experienced tutors, balanced institutional ownership between government-aided and private not-for-profit schools, and a generally conducive learning environment (75%), which creates potential for improvement if infrastructure and staff engagement are addressed.

In line with the TAM model, improving infrastructure and staff motivation would raise ease of use, while demonstrating the tangible benefits of e-learning to students and staff would strengthen usefulness, both increasing adoption rates.

Implications for Practice and Policy

According to TAM, the combination of infrastructure availability, supportive relationships, and positive perceptions of e-learning's relevance provides a foundation for acceptance. However, adoption will remain suboptimal without addressing systemic barriers, particularly platform access, regular interactive reviews, and staff commitment. Strengthening institutional policies, investing in ICT infrastructure, and providing targeted staff capacity building will be critical to increasing both ease of use and perceived usefulness. For sustainable curriculum implementation, institutions should: develop and maintain dedicated online platforms, integrate structured, ongoing curriculum review processes, ensure practicum sites meet midwifery practice standards, and provide targeted tutor orientation in e-learning delivery.

To enhance Perceived Ease of Use: Establish and maintain dedicated online learning platforms integrated with teaching schedules.

Invest in digital literacy training for staff.

Provide comprehensive tutor orientation in e-learning pedagogy and digital facilitation.

Improve internet reliability and equipment access across institutions.

To strengthen Perceived Usefulness: Engage employers to support study leave and workplace flexibility.

Implement continuous monitoring and evaluation of e-learning outcomes through tracer studies.

By addressing these issues, both ease of use and perceived usefulness can be enhanced, improving the likelihood of sustained adoption and positive learning outcomes.

The teaching and learning process may be significantly impacted by obstacles to the e-learning curriculum's implementation. These ramifications have an impact on midwifery training as well as graduates' proficiency, competences and preparedness to deliver high-quality maternal health care.

Secondly, inadequate curriculum implementation results in knowledge and skill gaps among student midwives, a lack of exposure to important fields like community-based midwifery or emergency obstetric care. Ultimately, the objectives of Uganda's health sector may be undermined by graduates who lack the competencies necessary to manage real-life maternal and neonatal health difficulties. Uganda can guarantee the growth of skill-driven and prepared midwifery professionals by removing these obstacles, which would eventually improve the health of expectant mothers and newborns.

Conclusion

The study confirms that the e-learning midwifery curriculum holds significant promise for enhancing access to midwifery education in Uganda, particularly for working professionals. However, realizing this potential requires simultaneous attention to infrastructure, capacity-building, and curriculum relevance.

Financial challenges were found to be a major hindrance to an effective implementation e-learning midwifery curriculum. Class-time usage was considered ineffective, and a lack of commitment among staff to utilize e-learning is a challenge, too. Tutors lacked important curriculum documents, updated schemes of work, and lesson plans. Active e-library systems were absent in most institutions enrolled in this study, and online platforms for accessing the learning content by students while off-campus. Absence of implementation and monitoring plans was reported.

Institutional support for students facing personal challenges was perceived as adequate. Schools were not considering students' prior ICT knowledge during admission; this underscores the need to address gaps in digital preparedness and institutional processes in order to effectively implement the e-learning midwifery curriculum.

In line with TAM, interventions that improve both *ease of use* and *usefulness* are most likely to drive adoption. Without these, even the most motivated learners and well-structured curricula will face persistent implementation barriers.

Recommendations

Based on the findings of this study, which aimed at assessing challenges and prospects for implementing e-learning curriculum in Uganda's midwifery training, the following recommendations are proposed for effective curriculum implementation:

Recommendations for Education Policy

Financial Support Mechanisms: Nursing and Midwifery training institutions should implement flexible tuition payment policies. The Government of Uganda should establish funding scholarships and grants specifically targeting e-learning midwifery trainees facing financial constraints. This initiative will address financial barriers that prevent trainees from accessing training and completing their programs.

Recommendations for Practice in Midwifery Training

Digital infrastructure development will be key in training institutions should establish comprehensive e-libraries and develop robust e-platforms to enable seamless content access for off-campus trainees. This infrastructure will provide both trainees and trainers with current peer-reviewed research, textbooks, guidelines, and clinical protocols essential for evidence-based practice.

Comprehensive training and orientation of trainers (Health Tutors and Clinical Instructors) on the e-learning curriculum. This comprehensive approach will equip them with the knowledge, skills, and attitudes necessary for effective digital teaching and learning, ensuring quality education and successful technology integration.

Effective time management and commitment for Principals, Health Tutors, and trainees to collaborate to maximize classroom time efficiency. Health Tutors must demonstrate a high-level commitment to utilizing e-learning approaches in midwifery training.

Systematic planning and documentation for Health Tutors to develop and regularly update schemes of work and lesson plans to ensure objectivity, organization, consistency, and continuity

in the teaching-learning process. This systematic approach promotes learner-centered, outcome-based instruction while maintaining curriculum fidelity.

Implementation monitoring and support for Principals to develop comprehensive implementation and monitoring plans to track curriculum alignment with learning objectives. These plans will support evaluation processes, foster collaboration among curriculum implementers, and ensure accountability for continuous improvement.

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Generalizability

The findings are generally applicable to midwifery training institutions in Uganda that are implementing or plan to implement an e-learning curriculum. Engaging government-aided, private not-for-profit, and private for-profit institutions increases representativeness, although variations in resources and technological capabilities might restrict broader applicability to other contexts.

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List of Abbreviations

E-learning: Electronic Learning
ICT: Information and Communication Technology
MOH: Ministry of Health
MoES: Ministry of Education and Sports
UNMEB: Uganda Nurses and Midwives Examinations Board
PNFP: Private Not-For-Profit
UNESCO: United Nations Educational, Scientific, and Cultural Organization

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Conflict of Interest

The authors declare no conflict of interest.

Author Contributions

All authors contributed to the study design, data collection, analysis, manuscript drafting, and final report writing.

Availability of data

The data is available from the corresponding Author upon request with reasonable grounds.

Authors' Biography

Kenneth Bigabwa is a Mental Health Nurse and Public Health Specialist working with the Uganda Health Professions Assessment Board. He has 20 years of experience in nursing practice, Training, and Research in Uganda. He holds a Diploma in Mental Nursing, an Advanced Diploma in Medical Education, Bachelors of Science in Public Health, and Masters of Science in Health Services Management.

Dr. Zamzam Ibrahim Nyandara is a Lecturer in Adult Education, e-learning, Curriculum, Educational Leadership, and Applied Education Research at the Faculty of Education, The Open University of Tanzania. She holds a PhD in Curriculum and Pedagogy and has over fifteen years of professional experience spanning higher education, teacher education, secondary, adult learning, and open and distance education. Her academic and research expertise covers curriculum development and implementation, instructional leadership, digital learning, and stakeholders' engagement. Dr. Nyandara has extensive experience in teaching and supervising Master's and PhD students, with a strong focus on action-oriented, policy-relevant, and practice-informed research. She has held key academic leadership roles, including Head of Department (Educational foundations, adult and distance education), and Head of Undergraduate Admissions. She has demonstrated strong capacity in academic administration and institutional leadership. Her recent research and consultancy work address instructional leadership, flipped teaching, ability grouping, blended teaching and learning, as well as capacity building for school leaders, contributing to evidence-based educational improvement in Tanzania and beyond.

Dr. Prisca Mbogo is an experienced educator and academic leader with over 15 years in teaching, curriculum evaluation, educational policy, and risk management in higher education. She is a Lecturer and Coordinator of the Risk, Management and Certification Unit at the Open University of Tanzania, where she also previously served as Head of the Department of Educational Foundations and Examination Officer. She holds a PhD in Education (Curriculum Evaluation and Assessment) from OUT, along with an MA in Education and a Bachelor of Education from the University of Dar es Salaam, and a Diploma in Education from Morogoro Teachers' College. Her work spans teaching, research supervision, curriculum development, and student mentorship, with a strong focus on inclusive education and quality assurance. Dr. Mbogo's research interests include homework practices, parental involvement, and learner engagement, with publications in journals such as the *Journal of Educational Practice* and *HURIA*.

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