



ARTICLE CATEGORY: Original Article

Perceptions And Experiences of Nurses and Midwives on the Uganda Nurses Midwives Council (UNMC) Online Registration and Licensure System: A Qualitative Study**Noble Ajuna^{1,2,3*}, Humphrey Atwijukire^{2,3}, Meble Kasande³**¹Cure Children's Hospital of Uganda, Mbale, Uganda²Makerere University School of Public Health, Kampala, Uganda³Faculty of Health Sciences, Bishop Stuart University, Mbarara, Uganda**Abstract****Purpose:**

Nurses and midwives are important members of Uganda's health workforce, and their licensure procedure is critical to developing a competent and regulated professional cadre. This qualitative study looked at nurses' and midwives' experiences while using the Uganda Nurses and Midwives Council's (UNMC) online registration and licensure system.

Methods:

Between June and August 2024, we conducted a qualitative cross-sectional study among nurses and midwives at the Uganda Nurses and Midwives Council (UNMC), Mbale, Mbarara, and Hoima Regional Referral Hospitals. Using purposive sampling, data were collected through eight Focus Group Discussions (FGDs), determined by data saturation. A semi-structured FGD guide was employed, and responses were captured using an audio recorder. The data was then analysed using thematic content analysis to generate codes, sub-themes, and overarching themes.

Results:

The study highlighted two main themes: enablers and barriers of online registration for nurses and midwives. Enablers included time-saving and convenience, cost-effectiveness, user-friendliness, and perceived safety and comfort, with participants appreciating reduced travel, lower costs, and ease of use. Barriers encompassed technical issues, limited computer skills, network problems, exploitation by intermediaries, and frequent physical follow-ups, which hindered the process for some users. Technical challenges, inadequate internet access, and exploitation by intermediaries led to frustrations, particularly for users with limited experience or resources.

Conclusion:

UNMC's online registration and licensure system brings several benefits, including convenience, cost savings, and increased safety, particularly for nurses and midwives from remote regions. However, significant challenges still exist. To ensure the effectiveness of the system, we recommend measures to address knowledge gaps, system delays, and financial exploitation of middlemen.

Keywords: Online registration, Licensure, UNMC, Nurses and Midwives**Corresponding Author:** Mr. Ajuna Noble**Email:** ajunanoble114@gmail.com**Submitted:** 15th May 2024 **Accepted:** 19th March 2026 **Published:** 29th May 2026**Open Access Statement:** This is an open-access article distributed under the Creative Commons Attribution License.**Introduction**

Globally, half of the overall global health workforce comprises approximately 27 million nurses and midwives (WHO, 2022). Within the WHO African Region, data from 2020 indicates an estimated 17.78 nurses and midwives per 10,000 population (iAHO_HWF, 2023). Focusing on Uganda, there are around 70,167 registered nurses and midwives under the auspices of the Uganda Nurses and Midwives Council (Seed Global Health,

2020). These figures indicate the critical role played by nurses and midwives in healthcare systems worldwide and spotlight their significant contributions to public health.

Upon completion of their studies at different levels, the nurses and midwives in Uganda are required to register with their professional regulatory body (UNMC) to obtain a practicing license, and this has to be renewed every 3 years (Ministry of Public Service, 2017).

Licensure is a process by which a governmental authority grants permission to an individual practitioner or a licensed health care organization to operate or to engage in an occupation or profession (Rooney & van Ostenberg, 1999).

The Uganda Nurses and Midwives Council (UNMC), a statutory body established by the Uganda Nurses and Midwives Act, 1996, regulates the training and practice of the nursing and midwifery profession so as to ensure public safety. This Council has the mandate to protect the public from unsafe nursing and midwifery practices; ensure quality of nursing and midwifery services; foster development of the nursing and midwifery profession; and confer responsibility, accountability, identity, and status of the Nurses/Midwives (The Nurses and Midwives Act, 1996).

The healthcare landscape in Uganda, like many other countries, has experienced a digital transformation aimed at improving administrative efficiency and enhancing the quality of patient care (*Digital Health Technologies: Revolutionising Healthcare in Uganda*, n.d.). Uganda's healthcare sector has progressively embraced digital technologies to overcome traditional barriers and improve service delivery. This includes: the adoption of electronic health records, telemedicine initiatives, and now the online registration and licensure system, which reflects the country's commitment to leveraging technology to enhance healthcare access and quality (Ministry of Health-Uganda, 2016).

The previous registration system used at UNMC to register nurses and midwives was a manual paper-based system where three major forms of records were generated, which were: Bio data forms, professional licenses, and certificates for Nurses and Midwives. The bio data forms were kept in archival boxes, whereas unissued licenses and certificates were stored in shelves or cabinets. This manual paper-based system was labour-intensive in nature, hindered tracking of record movements, papers were vulnerable to damage, there were limited report generation capabilities, errors in recordkeeping, excessive paper consumption, and demand for significant storage space (Nambalirwa et al., n.d.).

As part of this transformation, the Uganda Nurses and Midwives' Council (UNMC) in 2021 rolled out an online registration and licensure system for nursing and midwifery professionals to streamline the licensure process and reduce administrative burdens. The system offers services like, renewal of practicing license, booking for interviews, online interview assessment, registration and renewal private practice facility, fee payments using mobile money and direct transfer tracking of registration and licensure statuses, instant printing of provisional licenses among others and replaces the previously, traditional, manual registration and licensure processes which was associated with several challenges such as long queues (*About Online Registration & Licensure System – UNMC*, n.d.).

According to Lin et al. (2022, in a study to investigate a hospital online registration system, designing an e-system that can meet users' needs requires knowing the innermost perceptions of users towards the registration systems (Lin et al., 2022). For the successful implementation and utilization of this system, there is a need to understand the nursing and midwifery professionals' perceptions and experiences with the current online system.

In the past years, the UNMC had grappled with the challenges posed by the manual registration and licensure system, which was characterized by significant delays, long queues at its offices, and an overwhelming amount of paperwork. This hindered the efficiency of their operations and highlighted the pressing need for a modernized approach to streamline processes and enhance the overall effectiveness of the UNMC in fulfilling its regulatory responsibilities.

The integration of technology into healthcare systems, including the adoption of online registration and licensure systems, has the potential to streamline administrative processes and enhance efficiency, marking a significant shift from traditional paper-based processes. According to a study by Jawhari et al. (2016), online registration services may come up with benefits and challenges. Challenges may include unreliable power supply, poor network infrastructure, and a lack of Internet access and computer hardware. However, this is unknown for the online registration and licensure system for nurses and midwives. According to Lin et al. (2022, in a study to investigate a hospital online registration system, designing an e-system that can meet users' needs requires knowing the innermost perceptions of users towards the registration systems (Lin et al., 2022). While previous studies have examined digital health implementations in Uganda, limited research specifically focuses on' experiences with the online registration and licensure systems. For the successful implementation and utilization of this system, therefore, there is a need to understand the nursing and midwifery professionals' perceptions and experiences with the current online system.

This study aimed to explore the perceptions and experiences of the nursing and midwifery professionals in Uganda regarding the newly implemented online registration and licensure system.

Methods and Materials

Study Design

This study employed a descriptive cross-sectional study design with qualitative means of data collection and a phenomenological approach through focus group discussions to comprehend the experiences and perspectives of nurses and midwives utilizing the online registration and licensure system. Qualitative research is a method that aims to narrate the story of a specific issue by utilizing the experiences of individuals or groups

expressed in their own words. This investigation was conducted from June to July 2024.

Study Setting and Population

The study was carried out at four sites in Uganda: The Nurses and Midwives Council offices in Kampala, Mbale Regional Referral Hospital in Eastern Uganda, Mbarara Regional Referral Hospital in Southwestern Uganda, and Hoima Regional Referral Hospital in Western Uganda.

The Uganda Nurses and Midwives Council is located on Makerere Road, Mukubira Zone, Kawempe Division, Kampala. It serves as the primary registration centre for nurses and midwives in Uganda. Mbarara Regional Referral Hospital is situated in Mbarara, within Uganda's Western Region. The distance from Kampala, the capital, is approximately 269.6 kilometres. The geographical coordinates of Mbarara Hospital are 0°36'59.0"S, 30°39'32.0" E (Latitude: -0.616389; Longitude: 30.658889). It serves as a satellite Centre for registrations for nurses and midwives in southwestern Uganda. Mbale Regional Referral Hospital is situated in Mbale, Eastern Uganda. It is located around 227 kilometres (141 miles) by automobile, northeast of Kampala, the capital of Uganda. The geographical coordinates of Mbale Regional Referral Hospital are 01°04'36.0"N latitude and 34°10'35.0"E longitude (Latitude: 1.076667; Longitude: 34.176389). It serves as a satellite Centre for registrations for nurses and midwives in Eastern Uganda.

Hoima Regional Referral Hospital is located in Hoima Municipality, almost 200 kilometres west of Kampala, the capital of Uganda. Hoima Regional Referral Hospital is located in the geographical coordinates of 01°25'41.0"N latitude and 31°21'16.0"E longitude (Latitude: 1.428051; Longitude: 31.354451). It serves as a satellite Centre for registration for nurses and midwives in western Uganda.

Inclusion criteria

The study included nurses and midwives from the four indicated regions in Uganda who had ever used the online registration and licensure system and consented to participate in the research.

Sample Size and Sampling Method

A purposive sampling technique was used to select nursing and midwifery professionals across Uganda. Only nurses and midwives who had used the online licensure system were selected. We enrolled 71 participants in 8 focus group discussions as determined by saturation of information, as a small sample size of participants is adequate for qualitative studies, because the emphasis is on the richness of the data collected rather than the number of subjects. Information saturation was reached in the 8th FGD. None of the study participants dropped out of the study.

Data collection tools

Data was collected using a Focus group discussion guide (FGD) and an audio recorder. The FGD guide consisted of two sections. Section A consisted of questions regarding the biographic data of the participants. Section B consisted of questions regarding experiences and perceptions towards online registration and licensure, which were generated from a comprehensive literature review.

Data Collection procedure

After obtaining the Research Ethics Committee (REC) approval from the Cure Children's Hospital Research and Ethics Committee and administrative clearance from UNMC, Hoima regional Referral, Mbale regional Referral, and Mbarara Regional Referral, the researcher then explained to the study participants the study topic, objectives, and the purpose of this research. With the help of research assistants and health workers, we purposively recruited nurses and midwives who had used the online registration and licensure system. Data was collected using a focus group discussion guide and an audio recorder. The FGD guide consisted of 2 sections. Section A consisted of questions regarding the biographic data of the participants. Section B consisted of questions regarding the experiences of nurses and midwives with online registration and licensure.

The FGD guide was developed from the existing literature. It was then pilot tested on 10 nurses at Cure Children's Hospital in Mbale, and adjustments were made to make the questions clear to the participants. We obtained written informed consent from each participant before they participated in the study. Using the FGD guide, the participants were asked questions, and their views were captured with an audio recorder. Each interview was conducted in a private, quiet place and lasted between 30 and 60 minutes. In order to facilitate recruitment and ensure participants' privacy and confidentiality, interviews were conducted during lunch break when they were free. The intent was to allow them to speak freely about their experiences without interruptions. To ensure broadness, trustworthiness, and adherence of data, we observed credibility by prolonging the interviews to 30-60 minutes, transferability by interviewing one participant at a time and allowing them enough time for interaction, dependability by going back to participants to confirm their findings, and confirmability by including their narrative quotes in the findings.

Data Management and Analysis

The interviews were transcribed verbatim shortly following their completion. The researchers analysed the recordings and compared them with the transcripts to verify that the transcribed content originated from the recordings.

The recorded interviews and transcripts were securely stored and accessible only to the researchers. The audio

recordings and digital transcripts were stored on a flash drive secured with passcodes known exclusively to the researchers.

Data was analysed using thematic content analysis. This was achieved by the following steps: Participants' reports of the phenomenon were analysed and reanalysed to understand their experiences. The stories were interpreted, important words were isolated, and meaning was derived from them, with related assertions being assigned codes. Similar codes were merged to form subthemes. Ultimately, pertinent subthemes were combined to develop themes that provided a thorough representation of the experiences and perceptions of nurses and midwives concerning the new online registration and licensure system. The findings were validated by re-engaging participants and asking them to compare the results with their own, following which final adjustments were incorporated into the findings.

Ethics and Approvals

This research was performed in accordance with the 2013 Declaration of Helsinki (World Medical Association, 2013) and received approval from the CURE Children's Hospital Research Ethics Committee (CURE-REC: 2024-64). Administrative approval was secured from UNMC and the three regional site light centres. Before data collection, participants were informed of the study's goal, and informed consent was secured, encompassing the publication of their anonymized responses. Participants were informed that their involvement in this study was optional and that they might withdraw at any moment they chose. Confidentiality was maintained by designating

participant codes P1-P71 instead of their names. Ensuring anonymity of their information and safeguarding privacy by conducting interviews in secluded, quiet settings.

Results

Demographic Characteristics of the Study Participants

We purposively recruited 71 health workers to participate in eight Focus Group Discussions (FGDs), with the number of discussions determined by data saturation. The demographic data below, comprising 71 participants, reveals that nurses constituted the predominant group, with 58 nurses accounting for 81.7% of the entire sample. Among the 71 nurses and midwives, 18 were male (25.4%), and 53 were female (74.6%). Regarding residency, 43 nurses (60.6%) inhabited urban areas, whilst 28 nurses (39.4%) resided in rural areas. The data collection occurred at four main sites, with an equal distribution of participants: 20 nurses from the Uganda Nurses and Midwives Council (UNMC), Hoima Regional Referral Hospital (RRH), and Mbarara RRH, each representing 28.2% of the overall sample. Eleven nurses (15.4%) from Mbale Regional Referral Hospital participated. The majority of nurses and midwives possessed diplomas (37, 52.1%), followed by certificates (23, 32.4%), with a lesser number holding degrees (11, 15.5%). The predominant number of nurses utilized the online system for registration (64, 90.1%), whereas a minority utilized it for license renewal (7, 9.9%). (Table 1)

Table 1: Demographic Characteristics of the Study Participants

| Characteristic | | N=71 (%) |
|--------------------------------|------------------|-----------|
| Profession | Nurse | 58 (81.7) |
| | Midwife | 13 (18.3) |
| Gender | Male | 18 (25.4) |
| | Female | 53 (71.6) |
| Residence | Urban | 43 (60.6) |
| | Rural | 28 (39.4) |
| Site of data collection | UNMC | 20 (28.2) |
| | Hoima RRH | 20 (28.2) |
| | Mbale RRH | 11 (15.4) |
| | Mbarara RRH | 20 (28.2) |
| Level of Education | Degree | 11 (15.5) |
| | Diploma | 37 (52.1) |
| | Certificate | 23 (32.4) |
| Online Service Used | Registration | 64 (90.1) |
| | Renewing license | 7 (9.9) |

Experiences of nurses and midwives on the new online registration and licensure system

Overall, based on the interviews with nurses and midwives, the study emphasized two important themes:

enablers and barriers to online registration and licensure.

Theme 1: Enablers of online registration

This theme emerged from 4 sub-themes: Time saving and convenience, cost effectiveness, perceived safety, and Comfort.

Sub-theme 1: Time saving and convenience

The sub-theme emerged from 5 codes: less time involved in registration, no need for physical travel to UNMC, registration can be done at one's convenience, no lines involved, and the ability to register remotely from any location. Many participants praised the online system for saving their time and avoiding long trips to UNMC offices. Nurses from distant regions appreciated the ability to apply remotely without disrupting their work.

"This trip alone can take me 17 hours, so I will need at least three days to get here and back. But I only spent twenty minutes registering. It really did help me save time" (Female, Nurse, 27 years, UNMC)

Sub-theme 2: Cost Effectiveness

This sub-theme emerged from 4 codes: reduced number of trips for registration, Reduced transport costs, reduced accommodation costs, and reduced food costs. Most nurses mentioned that the system reduced the financial burden associated with registration, particularly for nurses and midwives who previously had to incur various travel-related expenses. By eliminating the need for frequent trips to UNMC offices, the costs of transport, accommodation, and meals were significantly reduced. This makes the registration process more affordable, especially for those in rural areas where travel can be costly.

"One advantage is that I was able to avoid spending as much money on transportation from Kabale to Kampala, which would have been better spent on my registration. My license is here; I came here just now to get it" (Male Certificate Nurse, 28 years, UNMC)

"The system is good. It saves time, money, it secures our jobs, and you don't incur a lot of expenses, because I didn't put in any expenses because I used my phone. Everything was done on the phone" (Female Certificate Midwife, 28 Years)

Sub-theme 3: User Friendliness

Some nurses and midwives appreciated the online registration system for having a user-friendly interface, making it accessible even for those with limited technical knowledge. This sub-theme emerged from codes: easy-to-use interface, second chances for assessment or corrections, easy password recovery and changes, and mobile money payment options. Users could easily navigate the system, change their passwords if they forgot, and complete their registration by paying fees through mobile money services. Additionally, several

nurses and midwives mentioned that the system offered second chances for those who had failed the online interviews, and this enhanced the overall user experience. Unlike in-person interviews, where failure led to referrals for retraining, the online system provides opportunities to retry and pass assessments without harsh penalties.

"The system is easy to use. When you open it, it easily guides you on what you really want, like professional registration and license renewal, and even guides you for the next steps" (Male Nurse UNMC, 28 years)

"When we used to come here for face-to-face interviews, there were a large number of people failing the oral interview. But for the online system, we are always given a second chance to repeat the online assessment in case we fail. So, in those trials, you try your best and pass" (Female certificate Midwife UNMC. 26 years)

Sub-theme 4. Perceived Safety and Comfort

This sub-theme emerged from codes: safety from travel-related accidents, documents are secure from loss, relief from travel fatigue, safety from long queues, and crowd-related issues. Many nurses perceived the online system as reducing physical risks related to travel and long waiting times, particularly for pregnant nurses and those from rural areas. Most nurses mentioned that safety concerns related to travel, such as accidents and fatigue, were addressed by the online system, which enables registration from safe and comfortable locations.

"... like for us who are pregnant.... we are now safe from travelling long distances and long queues at the UNMC. This also means the chances of getting accidents are reduced" (Female Nurse Mbarara RRH, 46 years).

Theme 2: Barriers to Online Registration

The primary themes arose from sub-themes, technical challenges, limited user knowledge and insufficient computer skills, exploitation, and the necessity for regular physical follow-ups.

Sub-theme 1: Technical Issues

This sub-theme arose from codes, system outages impacting accessibility, delays in document verification, password and login complications, document upload problems, and an inattentive customer service hotline. Several nurses and midwives consistently reported experiencing system outages, delays in document verification, and challenges with passwords or logins. The document upload process could experience failures, leading to irritation. Moreover, the unresponsive helpline exacerbated the challenges of addressing technical issues.

"The main challenge is delays. Delays occur because you submit, it takes time for your documents to be uploaded, and to be reviewed. After reviewing, you find you have maybe sent the wrong photo. So, you have to re-upload the documents again, and after uploading, you still take

another period of time" (Female Nurse, Hoima RRH, 38 years)

Sub-theme 2: Limited user knowledge and computer Skills

The sub-theme arose from 4 codes: inexperienced in computer use, difficulty in changing passwords and resolving login issues, and inability to scan and upload necessary documents. Participants lacking computer skills found the system difficult to navigate, which increased the time required for registration. Many nurses and midwives struggled with basic tasks, such as changing passwords or uploading documents, which hindered their ability to complete the registration process independently.

"My challenge is that not all of us are very well conversant with computers, like for example, I did not know how to scan and upload my academic papers on the system, so I had to use the café" (Female Nurse, 32 years, Mbale RRH).

Sub-theme 3: Network and accessibility problems

The sub-theme arose from 4 codes: poor internet connectivity affecting access, lack of appropriate devices for internet access, and slow internet speed. Poor internet connectivity, particularly in rural areas, made it difficult for some nurses and midwives to access the system. In addition to slow internet speeds, the lack of proper gadgets and devices to access the online platform further complicated the registration process.

"The system is good; however, you need to have a good smartphone that can run at least at 4G speed because when you have a small phone, you will never receive those messages. So, you need to buy at least an expensive phone or a laptop" (Male Nurse, 25 years, UNMC)

".....and we can't use our phones. Because I was going to use the phone, and it kept failing. And if someone calls during the process, then the whole process is cut off, so it's better to go to the café" (Female midwife, Mbale RRH, 34 years)

Sub-theme 4: Financial exploitation

Financial exploitation by middlemen, internet café owners, and peers was a concern. Some participants noted that middlemen charged fees to help expedite the registration process, with fees going up to 200,000 UGX. This was intensified by a lack of familiarity with online systems, leading to reliance on middlemen who imposed additional costs for assistance in the registration procedure, thus escalating the financial load.

"There is that internet cafe before you reach the nurses' council offices. I was referred there by a friend who said they can help me register in a short time, but at a fee. Indeed, they worked on me, and I was able to download my licence in 30 minutes, whereas I had tried and failed in 3 months. But they charged me a lot of money" (Female Nurse, 28 years, Hoima RRRH)

Sub-theme 5: Need for frequent physical follow-ups

Despite the online nature of the system, physical follow-ups were often required due to delays in document verification, failure to complete online interviews, or unknown technical issues. Furthermore, problems with the quality of uploaded documents and challenges in downloading the license after registration completion also necessitated follow-ups, negating some of the system's convenience.

"I have come here several times..... indeed, I have suffered. At first, I had issues with my photo, which was of poor quality. I was then sent back to upload a better photo. Second, I booked for the interview, and surprisingly, on that day of assessment, there was no assessment online. I had to come here again. Even after finishing the whole process, I'm here again to pick the original" (Male Nurse, 24 years UNMC)

Sub-theme 6: Limited IT support

Users noted that customer support was often unavailable, making online registration issues hard to resolve.

".... they put a customer helpline contact, but it never goes through, and you have no one to contact for help when something fails." (Male Certificate Nurse, 27 years, UNMC)

"I'm really annoyed with you people (meaning UNMC)they gave us a number to always call and inquire in case of challenges, but no one answers when you call... I'm really annoyed" (Female Enrolled Nurse, 26 years, Mbale RRH).

Discussion

The findings, classified into two primary themes: Enablers of online registration and barriers to online registration, reveal the experiences of nurses and midwives interacting with the Uganda Nurses and Midwives Council's (UNMC) online system.

Enablers of online registration

One of the major benefits noted by participants is the convenience and time-saving aspects of the online system. Nurses from distant regions expressed appreciation for the ability to apply remotely without interrupting their work routines. This finding is in line with a study by Oliveira et al. (2016), who explored the adoption of e-government services in healthcare and found that healthcare professionals highly value the ability to perform tasks online, especially when physical travel is eliminated. The review found predominantly positive results in user satisfaction, time-saving, and usefulness. Conclusively, NMISs were deemed effective in saving time and enhancing nursing care. (Choi et al., 2014; Oliveira et al., 2016).

Some Participants noted that the system reduced transportation costs significantly, as they didn't need to physically come to the council as frequently as before. The system cut down on travel and accommodation costs for those living far from Kampala. This concurs with a study by Gagnon et al. (2012) that analysed the impact of eHealth systems in developing countries, which noted that it reduces the need for physical visits to regulatory bodies and significantly cuts down transportation and accommodation costs.

Participants observed that the system provided opportunities for reassessment, in contrast to in-person interviews, where failure resulted in instant referral for retraining. This opportunity to repeat assessments promotes continuous learning without the imposition of penalties, hence increasing user engagement. Similarly, Rajput and Gupta (2019) explored the impact of online learning and assessment systems in medical education and found that the ability to complete tasks remotely saved both time and money.

Furthermore, the online system was seen as a safe and comfortable alternative for nurses and those in remote areas, reducing physical travel risks such as travel-related hazards, and providing comfort and convenience, especially for vulnerable populations like pregnant nurses and those living in remote areas. This finding concurs with a study by Ftoon H Kedwan et al. (2017), where it was noted that most of the outpatient population (patients and registration staff) prefer ORS (Online Registration Services) for a range of reasons, including patient comfort, data sensitivity, ease, accuracy, and fewer errors. These findings are also consistent with a study by Maloney et al. (2011).

Barriers to online registration

Despite the numerous advantages, participants faced several challenges, especially concerning system delays and technical problems. Several participants expressed frustration with the slow processing times, reporting that document review and feedback could take months. This is most likely caused by staff shortages in reviewing and verifying the academic documents submitted to the online system. Similar issues were reported in a study on e-health systems in sub-Saharan Africa, where poor system feedback loops contributed to user dissatisfaction (Kaplan & Harris-Salamone, 2009; Sharon, 2017). Additionally, technical issues such as system downtime and verification delays emerged as critical barriers to the efficient use of the system. Nurses reported that the system was often unresponsive, leading to delayed registrations. This finding is in line with a study by Hilbert (2011), where technical difficulties like these are well noted on the digital divide, particularly in low-resource settings where technological infrastructure is often poor (Hilbert, 2011).

Participants also pointed out challenges related to user knowledge and computer skills. Many nurses struggled

with basic tasks such as scanning documents or navigating the online platform. This issue of limited digital literacy is prevalent in developing countries, where ICT training is not always widespread (Chang et al., 2016; Horwood et al., 2023; Suwandari & Wardani, 2021). The need for external assistance to navigate the system further increased user expenses, as many sought help from colleagues or paid middlemen. Studies have also shown that the absence of user-friendly systems exacerbates inequities, as those with less access to technological skills or support are left behind (Bwalya et al., 2014; Harvey et al., 2023).

Network and accessibility problems were also a major concern, especially for participants in remote areas with unstable internet connectivity. The digital divide in internet access, which disproportionately affects rural and underserved regions, was identified by several participants, consistent with the findings of Graham, (2011), who highlighted geographical limitations as a barrier to accessing digital services in Africa (*Assessing the Digital Divide | UN-Habitat*, n.d.; *Expand Internet Connectivity to Underserved Communities | Monitor*, n.d.; Dow-Fleisner et al., 2022; Graham, 2011).

Lastly, some participants reported financial exploitation by middlemen, who charged high fees for assistance with the registration process. Financial exploitation during online registration is a recognized issue in developing regions, especially where digital literacy is inconsistent, and support frequently incurs a fee. Intermediaries often exploit individuals by charging exorbitant prices for self-service activities such as document uploading, troubleshooting, or expediting approvals. Furthermore, research on digital financial inclusion in Africa has identified that individuals encounter obstacles such as inadequate connectivity and convoluted systems, and frequently seek assistance from informal agents. These agents may impose substantial fees, resulting in financial strain, particularly for low-income individuals. This phenomenon has been especially observed with mobile money services and online tax systems, where individuals report elevated fees for intermediary support owing to technical obstacles or ambiguous guidance (Mpofu & Mhlanga, 2022; Sawada, 2022).

Recommendations

The UNMC should focus on optimizing the performance of the online registration platform to address the frequent delays in document review and approval by implementing a real-time tracking feature, where applicants can monitor the progress of their submissions. This would reduce feelings of uncertainty and frustration. Additionally, increasing staff or automating parts of the verification process could help expedite the review of documents and assessments, ensuring faster feedback. Moreover, the UNMC should also consider enhancing the current help desk within the platform, where users can seek immediate assistance for system-related issues like failed uploads or password

resets. This could reduce reliance on physical visits and external IT support.

Given the challenges some nurses face with ICT skills, the UNMC should develop comprehensive user guides and instructional videos that provide step-by-step instructions on how to navigate the system, upload documents, and complete other tasks. These resources should be easily accessible within the platform and distributed through social media, email, and other channels. Additionally, offering free workshops or training sessions on digital literacy could empower nurses to complete the registration process independently.

For nurses lacking personal devices, there is a need to create designated centres or collaborate with regional satellite centres to offer safe access points equipped with computers and internet for completing the registration procedure. This will reduce reliance on exploitation from computer cafés, thereby enhancing data privacy and security for applicants. More so, the exploitation of applicants by middlemen charging fees for expedited services indicates a necessity for enhanced enforcement of transparency and equity within the system. A system for reporting and addressing instances of exploitation and extortion should be established to safeguard nurses from incurring unwarranted fees.

Limitations of the study

The results of this study might have been affected by a number of limitations. First, the study's qualitative design restricts the results' applicability to the larger Ugandan nursing and midwifery population, even while it permits a thorough exploration of participants' experiences. Furthermore, self-reported experiences were used for data collection, which could induce response bias. Lastly, given the relatively new nature of the online registration and licensing system, participant experiences may change over time, indicating the need for additional research to evaluate long-term views and results.

Conclusion

The UNMC's online registration and licensure system brings several benefits, including convenience, cost savings, and increased safety, particularly for nurses and midwives from remote regions. However, significant challenges such as system delays, technical barriers, financial exploitation by middlemen, and limited user knowledge must be addressed to improve the user experience and effectiveness of the system.

Abbreviations

UNMC, Uganda Nurses and Midwives Council; REC, Research Ethics Committee; FGD, Focus Group Discussion; WHO, World Health Organization; EMR, Electronic Medical Record; EHR, Electronic Health record; ICT, Information Communication Technology; IT, Information Technology; ORS, Online Registration

System; TQM, Traditional Queue Management; ILS, Integrated Library System; ITS, Integrated Technical Services; CPD, Continuing and Professional Development; NMISs, Nursing Management Information System.

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Disclaimer

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