Willingness and readiness to use digital technologies in midwifery practice among midwives at tertiary health facilities in Uganda.

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Abstract

Background:

Digital technologies being used to promote maternal health and support service providers have increased dramatically during the last 20 years. The internet, mobile technologies such as mobile software programs or apps, wearables, Texting, social networking, telecare, and remote monitoring equipment are all examples of digital forms of support. Digital technologies for health have emerged as a prominent field of practice for utilizing both standard and novel kinds of applications of information and communication technology to solve upcoming health complications, particularly in the field of midwifery. The study objective was to explore the willingness and readiness to use digital technologies in midwifery practice among midwives at tertiary health facilities in the Buikwe district in Uganda.

Methodology:

Using the qualitative and phenomenological design, a purposive sampling technique was employed to select 15 interviewees from Kawolo and St. Charles Lwanga Hospitals. Data collection was by use of an interview guide, and data analysis involved Thematic content analysis. The results showed nearly all of the midwives were ready to use digital technology.

Results:

Altogether, six thematic areas emerged as considerations when getting ready to use digital technologies: improved patient care, communication, training and education, information sharing, age, and attitudes toward digital technology. The drawbacks included; high costs of devices and data, attitude, and unavailability of digital technologies.

Conclusion:

Majority of the midwives are willing and ready to use digital technologies. Therefore, they need to be encouraged and facilitated accordingly since technology integration into midwifery practice can improve the overall health of mothers and their babies.

Recommendations:

This study recommends that; The government should provide more digital technologies in hospitals, subsidize mobile data costs and the market price of smartphones, Internet access is promised in major departments, and free internet access for research purposes will be provided.

1. Background of the study

Maternal death is still a major issue all over the world. The World Health Organization (WHO) estimated that 810 women die per day as a result of problems associated with pregnancy and childbirth around the world in 2017. (WHO, 2019). In 2017 295, 000 women died as a result of pregnancy and childbirth complications, according to the World Health Organization. The vast majority of the incidents

occurred in low-resource areas and might have been prevented. Enhancing maternal health is the third of the thirteen Sustainable Development Goals (SDGs) agreed upon by the international community in 2015(WHO, 2019). In Uganda, 336 maternal deaths per 100,000 live births have been reported (Bagughirana, 2020).

The use of digital technologies to promote maternal health and support service providers has increased dramatically during the last 20 years. However, the use of information and communication technology to support the health and health-related sectors" is what refers to mobile health or tele health (WHO, 2019). The internet, mobile technologies such as mobile software programs or apps, wearables, text messaging, social media, telecare, and remote monitoring equipment are all examples of digital forms of support. In this initiative, the terms digital technology, electronic health (eHealth), and mobile health (mHealth) will be used interchangeably. Electronic health refers to the use of modern information and communication technologies to improve or enable health and health care (Neter & Brainin, 2012).

Mobile health (mHealth) is described by the World Health Organization as the use of mobile and wireless technologies to support the attainment of health goals, such as mobile phones, patient monitoring devices, personal digital assistants, and mobile software applications (Mendoza, Okoko and Morgan (2015). In other words,

they included the use of mobile telecommunications and multimedia technologies in the delivery of health services and public health systems (Mendoza et al. 2015).

To meet health demands, digital health, or the use of digital technologies for health, has emerged as a key field of practice for utilizing both traditional and novel kinds of information and communication technology (WHO, 2016). Digital health is built on eHealth, which is described by the World Health Organization as "the use of information and communications technology in support of health and health-related sectors" (WHO, 2015). The approach to assist nations in achieving universal health coverage was supported by the 71st World Health Assembly. In contrast, mobile health (mHealth) is a subset of eHealth that is defined as "the use of mobile wireless technologies for health" (WHO, 2016).

Digital technologies have the potential to change the way people access and receive health care (WHO, 2011).

This technology is at our disposal, and midwives have major decisions to use it for the health, safety, and wellbeing of mothers and babies (WHO, 2013). Recently, mobile device forms of digital technologies have become essential in facilitating the measurement of performance and progress, improving inclusiveness, and transparency, connecting information systems for reporting, research, and delivering healthcare and advice to even the most remote locations (WHO, 2015).

Several reproductive, maternal, neonatal, and child health (RMNCH) community partners believe that technology and, in particular, mHealth, are vital to improving women's and children's health (Mauco, 2018). The sixth United Nations (UN) Commission recommendation on Life-Saving Commodities for Women and Children encourages countries to integrate digital technologies into national health systems and infrastructure, while the third recommendation on information and accountability for women's and children's health encourages countries to integrate digital technologies into national health systems and infrastructure. Many countries are now mak-

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ing digital technology a central part of their future strategies to deliver essential health interventions and services to their citizens (WHO, 2016).

The United Kingdom has well-developed technology resources that help to support the e-health system. In the United Kingdom, health workers still use mobile devices and Computers with internet access when interacting with patients. Appointment scheduling, e-radiology, and e-prescription services are among the health services adopted in the UK, according to Eason & Waterson (2013). Governments, donors, and multilateral institutions have all recognized the potential of digital technologies to strengthen health systems (WHO, 2019). The World Bank Group, the US Agency for International Development (USAID), and the World Health Organi-zation (WHO) urged for the "application of the digital technology revolution to scale up health initiatives and engage civil society" in a joint document published in 2015 (WHO, 2015).

In sub-Saharan Africa, technology integration is being implemented in some countries, though many challenges have been reported (Coleman, 2014). Although medical teams are continuously confronted with ongoing changes in the way digital technologies are used to offer quality care to their clients, early diagnosis, treatment, and sharing of information are some of the benefits reported (Kiberu, 2017). It's critical to recognize that incorporating new technology into normal care can be a lengthy and unexpected process (Carlfjord & Mauso, 2015).

The incorporation or routine usage of digital technologies in health has been termed a successful integration (Carlfjord, 2017). Even when there is evidence of potential advantages to patients and the whole health care system, many poor countries are slow to accept new technologies (Lawman, 2017).

As a result of the exponential expansion of Internet usage and advances in networking and information communication technologies, the eHealth movement has been introduced and viewed as a crucial aspect of the health care sector. ICT is being used to connect health care providers, patients, and governments; to educate and inform health care professionals, managers, and consumers; to drive innovation in care delivery and health system management; to improve our health care system. (WHO, 2012; Ball, 2011; Ludwick, 2019).

However, the state of e-health around the world differs due to the lack of a consistent technique for developing e-health systems. In some affluent countries, more than half of primary care providers use electronic health records. For example, consumption rates in Sweden, the Netherlands, and Australia is 90 percent, 62 percent, and 55 percent, respectively (Mugo, 2014). Even in other industrialized countries, where technical dispersion is high and the economy is steady, adoption of e-health apps appears to be substantially lower according to the National Centre for Health Statistics (2015), only 1.2 percent of all hospitals and 2.6 percent of all clinics adopted EHR (Nzuki&Mugo, 2014), and the percentage of physicians using any Electronic Health Records (HER) system varied by state, ranging from 54 percent in New Jersey to 89 percent in Massachusetts (2015).

In Nigeria, the Federal government has made efforts to establish and apply e-health technology in hospitals to improve healthcare services. The healthcare workers reported they were not considered in the planning process, and technology implementation protocols are largely at pilot steps, uncoordinated, and waiting to be promoted due to a lack of other complements, like comprehensive e-national health policies and guidelines (Luna et al., 2014). Furthermore, there are other limitations to the acceptance of e-health by healthcare professionals and they include apathy in embracing ICT infrastructure and a lack of awareness of e-health advantages (Adebayo &Ofoegbu, 2014).

A comparable approach in Kenya that included health information messages and service prompts resulted in a higher rate of adherence to required ANC visits (Fedha, 2014).

in Uganda the government has taken many steps to strengthen the physical infrastructure of district, regional, and national referral health facilities (Kiberu, 2019).

The major challenges in the health care system

in Uganda are insufficient technology resources and limited use of digital technology equipment, for example, computers, machines, the internet, and regular power blackouts (Kiberu, 2017). The main goal of e-health systems is to improve people's health (Crock 2016). Patient-centered E-Health systems are patient-centered and entail the use of current information systems and technology to integrate and coordinate healthcare delivery to improve patient outcomes, delivery efficiencies, transparency, and accessibility. Standard e-health systems include electronic prescribing (e-prescribing), which allows patients to order repeat prescriptions online, online patient scheduling and referrals, and telehealthcare systems, which allow patients with diabetes or heart failure to manage their healthcare from the comfort of their own homes. e-Health systems (http://www.ehealthireland.ie) incorporate newer technology such as ambient assisted living (AAL) systems, robotic surgical systems, and body-worn sensor devices.

In an increasingly digital environment, governments around the world are recognizing the potential benefits of e-health in harnessing technology and health services to improve a country's health system. Adoption of the e-health paradigm has been hailed as a critical component of healthcare systems (Lam et al., 2016. Juma et al., 2012; Farzianpour, Amirian, and Byravan, 2015).

Furthermore, the system enables healthcare practitioners to improve the quality of care they provide. As a result, the desire for high-quality and equitable healthcare distribution has prompted both the government and healthcare providers to focus on e-health as a means of overcoming the obstacles that health institutions face.

The benefit of e-health lies in its ability to reduce healthcare costs while providing better care through a citizen-centered approach. As a result, there is widespread agreement that e-health solutions may improve efficiency, improve patient safety and care coordination, and improve health outcomes when appropriately implemented and adopted by nurses and other healthcare workers (Busagala&Kawono, 2013; Mugo, 2014).

Unfortunately, establishing an eHealth system is a costly procedure, and developing countries can rarely afford to do so. Mobile phones, on the other hand, have gone from being a luxury item held by a select few to a fundamental good owned by the masses in these same countries. Wireless technologies have proliferated at extraordinary speeds in underdeveloped countries, leapfrogging the time lag seen with prior technologies (Gultiano, 2011).

Therefore, as medical practice is changing, midwifery practice is also changing, and women's expectations about the use of digital technologies are unmet.

Healthcare advancement and the use of technology are important in achieving SDGs in all countries, especially LLMICs such as Uganda. The availability of digital technologies for reproductive health in Uganda is on the increase, and it is timely to journalistic explore the willingness and readiness of midwives for the use of digital technologies in midwifery practice in tertiary health facilities in Uganda.

2. Methodology

2.1. Research design

This study used a qualitative design and a phenomenological approach to examine human experiences with digital technologies through the descriptions provided by the participants. It was also to allow individuals to describe circumstances in their typical place of practice.

2.2. Study area

The research was carried out at the Kawolo and St. Charles Lwanga hospitals' Departments of Obstetrics and Gynecology, which are part of the Buikwe district's tertiary health services. The Buikwe district is found in Uganda's Central Region. The Kawolo and St. Charles Lwanga hospitals each serve a population of over 100,000 people, and they provide specialized care such as obstetrics and gynecology, as well as medical, surgical, and emergency care to the district and neighboring districts.

2.3. Study population

Midwives and key informants involved in the practice of midwifery, such as doctors, information technicians, heads of departments of radiology and obstetrics and gynecology, and main nursing officers, were included in the study population.

2.4. Sample size determination

For phenomenological studies, 10 to 30 participants are recommended (Creswell, 2014). In this study, 15 midwives and five (5) key informants were recruited, and data collection ended when saturation was reached.

2.5. Sampling Method

This being qualitative research, the purposive sampling technique was employed for selecting interviewees involved in the practice of midwifery.

2.6. Inclusion and exclusion Criteria

Inclusion Criteria
The study participants included midwives, doctors, information technologists, and heads of departments of radiology, obstetrics, and gynecology, as well as a principal nursing officer who was conducting midwifery services at the time of the study.

It also included midwives, doctors, information technologists, heads of departments of radiology, obstetrics, and gynecology, and a principal nursing officer who voluntarily accepted to take part in the study.

Criteria
The study excluded midwives, doctors, information technologists, heads of departments of radiology and obstetrics and gynecology, and principal nursing officers on any kind of leave.

Also, doctors, information technologists, heads of departments of radiology and obstetrics and gynecology, and principal nursing officers were found sick at the time of data collection.

2.7. Study variables.

This being qualitative research, it is thought to identify opinions on the use of digital technologies in midwifery practice. The variables included knowledge, views, factors affecting readiness and limiting factors, and current digital technologies in midwifery practice.

2.8. Research instrument

Data was collected with the use of one-on-one in-depth and key informant interview guides. The researcher created this, which was then reviewed by the supervisors. Interviews were audio-recorded and notes were also taken. The interview guide contained open-ended questions and had five sections: social-demographic data, knowledge, views and opinions, factors, and types of digital technologies used in midwifery practice. This technique was selected because it's appropriate for eliciting individuals' ideas, opinions, experiences, and feelings.

2.9. Data collection methods

Self-introduction to each participant was done by the researcher to create rapport. Upon receiving informed consent, the researcher went ahead and scheduled one-on-one interviews with the participants according to their working schedules. The interviews were scheduled for very early morning hours before the daily routine of work and afternoon for other participants. Upon voluntary agreement, each interview was timed for at least 30 to 45 minutes per participant. The respondents were given serial numbers from one (1) to twenty (20) according to the sequel in which their interviews were conducted.

2.10. Data analysis and presentation.

By the 15th participant, data saturation had been reached. And audio-recorded data was transcribed verbatim after the interview and codes were developed after the repeated playing of the audio to ensure correct transcription and to minimize errors and omissions. Atlas Ti was also utilized to aid in the generation of coding lists based on the study's objectives, which were then examined using thematic content analysis. Emerging themes were noted and verbatim reported.

2.11. Data Management

All data collected, recordings, and written backup notes were checked and kept confidential to avoid any unauthorized access by anyone except the researcher. This helped the researcher protect the privacy of the interviewed participants.

2.12. Ethical considerations

The African Center of Excellence for Public Health and Toxicological Research at the University of Port Harcourt's Research and Ethics Committee gave its approval to carry out this investigation. Administrative approval was also obtained from the District Health Officer of the Buikwe district. Written informed consent was also thought of after explaining the purpose and benefits of the study to the respondents. Consent was obtained from the participants before conducting interviews. Transcribed documents were kept in a locker in the researcher's office and transcribed documents in a passworded computer, accessed only by the researcher, and all information about the respondents was handled with the utmost confidentiality and was only used for intended purposes.

3. Results

The results of this qualitative research are based on interviews with fifteen participant midwives and key informants. All participants voluntarily participated. Among the participants interviewed, their qualifications ranged from certificates, diplomas, and bachelor's levels of training. The twenty participants were between 21 and 60 years old. Three participants were between 21 and 30 years old, eleven were between 31 and 40 years, and two were between 51 and 60 years of age. Furthermore, all participants obtained a tertiary level of training, and the majority of the participants were females, with only a few males.

During the interviews, six themes that describe the knowledge, views, opinions, factors, and perceptions of staff toward digital technology were identified:

3.1. Improved patient care

The majority of the people who took part in the in-depth interviews were familiar with the concept of digital technology. Some indicated they had heard the term "digital technologies" and had used them in health facilities while providing care, albeit they were not sure if they had been used effectively.

Several concerns concerning digital technology were expressed, including staff values and the provision of care for pregnant and laboring women. Participants, particularly midwives, predicted that the adoption of digital tools will modify the current model of care, making it more interventionist and informational.

Improving patient care immerged as an advantage of using digital technologies as well as a factor that contributes to the use of digital technologies at their places of work.

... with the internet on smartphones, I can get guidelines that say I have a drug that has been prescribed by the doctor and I have no one to ask or airtime to call, yet I have MBS on my smartphone. It is simple for me to connect to the internet and provide care without causing the mother to miss treatment or care (interview 1: MW, [Midwife]).

There was a view that digital technologies would have a great impact on midwifery care once adopted by all.

Because you'd need a midwifery textbook or wait for the doctor or colleagues to discuss and get way out to be able to offer care

... You know, the digital technologies are good and the facility has the internet in some places, which has eased our work during the care of mothers. (Interview 5: MW).

There were some challenges as well that were reported, and they affected the mode of delivery of care according to midwives.

We have computers in maternity as well, but we've never been taught how to use them, so they're useless. If we could be trained, we could use it to study and improve our knowledge of maternal care with changing evidence, as well as obtain videos to demonstrate some procedures. (Interview 4: MW)

This was a big setback for the early midwives to use the form of technology at their disposal, but because they couldn't operate it, they could not use it.

Also, one participant who declined to be quoted said "that they were told they spoil a machine they pay. This only affected their interactions with the kinds of technologies available, with the fear that by mistake, one could disable certain parts of the machines and be asked to pay them back. If you find the machine is very expensive, we can't afford it. If we are not sure and there's no technical person, we go by manual, which is also cumbersome, and it affects the quality of care in the long run.

It would be beneficial if these midwives were evaluated regularly and informed of the new changes to the technologies in their units.

3.2. Communication.

They reported that digital technologies like smartphones are being used for communication in most departments.

Smartphones were identified as the most commonly used digital technology in the two health facilities.

...participated site: "smartphones are being used in sending weekly data to the ministry of health. We also use them for many more things like researching, studying, and communication."

One participant reported that the use of social media has also boosted information sharing.

We always get materials to read on WhatsApp and share meeting details, and if there's any training, members are informed via WhatsApp. We have a general group for obstetrics and gynecology where all communications are passed "(interview 8: MW).

They indicated readiness to go digital, though others were unwilling and mentioned their reasons.

4. Discussion

The study explored midwives' willingness and readiness to use digital technologies in midwifery practice and is the first study of its kind in a Ugandan setting. Midwives who practiced midwifery at the two hospitals, Kawolo and St. Charles Lwanga, and other key informants present during the time of the study, who willingly accepted to participate in the study, were interviewed. The findings will be discussed from the standpoint of using digital technologies to influence midwifery practice. The results of this qualitative research are based on interviews with twenty participant midwives and key informants. All participants voluntarily participated. Among the participants interviewed, their qualifications ranged from certificates, diplomas, and bachelor's levels of training. Furthermore, all participants received tertiary-level training, and the majority of participants were females, with a few males, reflecting the country's training system, in which only midwives are trained in that specialty.

The study's key findings suggested that the majority were willing and ready to use digital technologies, while a few showed that some resistance existed to the adoption and use of digital technologies available today in their units to provide midwifery services.

4.1. Factors that promote the use of digital technologies in midwifery practice

Here the factors that promoted the adoption of digital technologies were also perceived as the factors that affected the readiness to use these technologies.

4.1.1. Improved patient care (desire to provide quality care)

Digital technologies were identified to improve the way health care is thought of and delivered, not only by midwives but also by the other health professionals with whom they work.

According to Award et al., (2021), digitalized health is revolutionizing the health system, moving away from the traditional. In the same way, digital technologies have the potential to improve our ability to accurately diagnose and treat diseases and enhance the delivery of healthcare for individual patients, as well as empower patients to have more control over, and make better-informed

decisions about, their health. This concept offers a variety of opportunities to facilitate the prevention and early diagnosis of life-threatening diseases rather than traditional healthcare settings. Long et al. (2018) also argued that in consideration of delivery of care, staff performance, training, and monitoring of patients as argued by Award et al., (2012). According to information sources, implementing e-health in low and middle-income nations across Sub-Saharan Africa has the potential to improve health service delivery and assist health workforce development. According to Mauco, (2018), several community partners, including Reproductive, Maternal, Neonatal, and Child Health (RMNCH), believe that technology, particularly m-Health, is critical to improving women's and children's health. Midwives also noted that almost all the care they give can be passed on electronically to mothers who feel they do not need hospital care. They can simply consult midwives online and they are spared the burdens of hospital care. Another research by Eason & Waterson (2013), in the United Kingdom, reported health workers have mobile devices and computers with internet access that they utilize when interacting with their patients. These include scheduling appointments, e-Radiology, and e-Prescription services, among others. These are some of the health services that have been used in the UK. These services can also be introduced in Uganda to aid the effective care of clients.

The study participants also perceived that digital technologies may serve as a means to increase awareness and knowledge related to the different midwifery packages during practice among midwives, other professional health workers, and their patients. Antenatal packages with dos and don'ts during pregnancy can be shared online with interested expectant mothers.

Despite the obvious advantages of digital technologies in enhancing patient lives, there are still some barriers to their adoption. In one of the hospitals, for example, just two patient monitors were found throughout the hospital. Due to a lack of personal funds to purchase technological gear, midwives, other health staff, and patients are frequently the ones who stand to benefit the

most from breakthrough technologies. This was in line with Awad's report (2021), which reported that healthcare professionals like midwives now have access to a variety of technologies in a typical clinical context, which is critical for monitoring patients' health and recognizing clinical problems. The electronic vital signs monitor (patient monitor), which monitors the patient's heart rate, electromagnetic cardiogram (ECG), oxygen saturation (SpO2), body temperature, and blood pressure, is currently the most common physical sensor used in hospitals. Patient care in all specialties, from general practice to intensive care units, depends on the gathering of such clinical measurements (Abejirinde, 2018). This was in line with the findings of the study, as some were reported to be present at the time of data collection, even though functionality was not guaranteed. All of these are being utilized to promote lives, treat and diagnose diseases, as well as monitor the patient's well-being. In Uganda, midwives strive to see a healthy mother and her infant, which is always a driving force for client attention.

Midwives reported readiness to adopt digital technologies because they were being used to save lives.

4.1.2. Communication and information sharing

Communication merged as a great factor in enhancing digital technology use among midwives. Various means were being used at the workplace to communicate with colleagues, administrators, patients, and the external authorities of government representatives in the district. Common means of communication were through emails, Facebook, and Zoom meetings, with the most used being WhatsApp, which was reported to be effective use. Health workers in LMICs can use mobile social media with ease as long as they have the gadgets. In LMICs, the use of mobile phones is believed to have significant potential for health workers. In these situations, health professionals frequently lack access to information and knowledge, as well as to professional communities this is in agreement with Pimmer &Tulenko, (2016) in their study of Affordances and constraints of mobile networked communication for health work-

ers in low-and middle-income countries. Mobile phones are frequently the sole digital instrument available to assist them in their profession (Crow et al., 2012). Recent mHealth evaluations have looked at the potential for mobile phones to help health workers in low- and middle-income countries. Positive findings, on the other hand, are encouraging and can be summed up as follows: Education and training (a), performance and decision support (b), data collection and tracking (c), and coordination and management (d). For starters, roughly a third of the mHealth programs assessed by Braun et al. (2013) are educational and training-oriented. These instructional aspects were mostly achieved through

delivering continuing medical education via text and multimedia messages to health workers' digital assistants (PDAs) and phones (Källander et al., 2013). In Kenya, for example, providing text-based guidance on health workers' mobile phones regularly greatly improved malaria case management (Zurovac et al., 2011). recent studies have found that by using mobile devices, health personnel can give more full and timely patient-related data. In Malawi, for example, it was reported that an intervention in which health staff submitted child nutrition data via SMS resulted in higher data transmission rates, improved data quality, and improved monitoring capabilities (Blaschke et al., 2009) which are somewhat similar to this study finding where it was reported to improve on data transmission. Fourth, Braun et al. (2013) discovered evidence that mobile phones were successfully used to coordinate and oversee rural and geographically spread health professionals, based on management methods.

These are some of the benefits of using social media for health improvement in the form of communication. Communication is vital to all and effective management by the midwives in their units.

4.1.3. Training and Education

When midwives were asked to describe the factors that hindered digital technology/e-health uptake as well as those factors that facilitated the uptake, e-health infrastructure is not only costly

to set up, but it also necessitates ICT skills and knowledge to use e-projects successfully which was found to be lacking with most midwives this is in agreement with Special, (2013) in the research on the factors affecting mHealth use in midwifery. The adoption and real-world usage of e-health in primary care will most likely be driven by medical healthcare providers with ICT skills. This is because healthcare providers with ICT skills and expertise can recognize the potential benefits of e-health in their workplace. Participants cited a lack of ICT skills and knowledge as a factor influencing the deployment of e-health in public hospitals as a contributing factor. This finding is similar to Furusa& Coleman (2018), who said the poor adoption of e-health in public hospitals in Zimbabwe was due to a lack of ICT skills and expertise among medical healthcare workers in the country's health sector. As a result, individuals could be unable to accept the use of e-health technologies. Their study showed that the Mo-HCC should educate midwives, doctors, nurses, and other healthcare providers to help them become more techno-literate which is in agreement with this study's finding. As a result, educating and training medical professionals on how to effectively use e-health is critical to the adoption and deployment of the technology (Alok, Yagos&Ovuga 2015). Furthermore, the utilization of e-health is complicated due to a lack of ICT skills and understanding among medical healthcare providers. Skills and knowledge in information and communication technologies are critical in reducing technology complexity.to Neer and Sertel (2015), a low level of complexity promotes technology adoption because users can learn and use it. As a result, it is critical to ensure that prospective users have adequate knowledge and skills when promoting innovation to the target population.

In this study, the great majority pointed out the lack of training on how to use the technologies at their disposal. Training and education were noted to be significant factors related to the implementation of digital technologies. This is in agreement with God and Johansen (2012). They conducted their study in Europe about the adoption of new

technologies. They also found out that for effective adoption of technology, the target group must be trained on how to use it, which is conquered by these study findings.

Additionally, Abejirinde (2018) in the study of diagnostic and clinical decision support systems for global health programs discovered that digital technologies must be sustained and integrated into routine use for both patients and healthcare professionals through initial and refresher training of users, technical and supervisory support, trust in decision recommendations, and well-resourced health systems. Together with Källander et al. (2013), they argued about improving the expanding presence of mobile technologies and phones among health workers, especially midwives. Mobile health can be implemented to deliver improved and increased healthcare services to mothers and communities around

According to Furusa& Coleman (2018), in Zimbabwe, it was found that IT specialists' technical assistance was also essential for the implementation of an IT project. To keep the system up and running, technical help is essential. However, several participants stated that they were not receiving adequate technical assistance from IT, staff, due to the lack of IT departments, the attitude of IT personnel, or a lack of experience, as detailed below. Based on these comments, it appears that technical support is essential for the operation of e-health systems.

During the monitoring period, the study discovered that only central hospitals had small IT departments with two to five IT support staff. According to the interviews and observations, the majority of hospitals lack enough technical support. According to Ross et al. (2016), the inclusion of technical support staff has been suggested as a strategy to relieve hurdles related to workflow disruptions, roles, and responsibilities that e-health adoption may involve. As a result, hospitals should have an ICT infrastructure in place, and IT personnel should be knowledgeable about healthcare technologies. This is the same as the findings of this study. Participants were noted saying that if they could have someone to guide them through, they would not face enormous challenges.

This theme was also an enhancing factor in the adaptation of digital technologies, hence more, especially when the participants acquired adequate knowledge and skills to run digitally. It is therefore wise to establish training sessions for midwives at their workstations to catch up with competence development since the services provided are not limited to monitoring, vital observations, online consultations, education, sharing ideas, making consultations, communication, and study research, to mention but a few.

4.2. Factors limiting the adaptation of digital technologies in midwifery practice

4.2.1. Age

In this study finding, age was identified as a limiting factor to the adoption of digital technology, whereby aged midwives referred to the young ones using digital technology rather than the aged ones. Participants in this study were on average 38 years old, with an average of five years of clinical experience. Individuals' age and knowledge of the notion of eHealth had a weak inverse association, with younger and less experienced participants being more aware of digital technology. Younger participants were also more familiar with ICT-related facilities like computers and the internet than senior health midwives (Boringi, 2015), which is consistent with younger doctors' being more ready to adopt telemedicine and e-health care, according to another study (Meher, 2011).

This finding could be described by the fact that telemedicine is a relatively new idea that necessitates the use of ICT tools such as cell phones and online media, which are mostly used by younger generations who have had more exposure to technology (Boringi, 2015). These findings are somewhat similar to those of Furusa and Coleman (2018) in the study of factors inhibiting the implementation of digital technologies among doctors, who noted that age is by definition a source of the digital divide. They continued to say that during the interview, the doctors who took part, particularly the younger ones, raises concerns about the elderly healthcare providers who attended medical school at the paper age, as was pointed out by

one of the midwives.

This demonstrates that age plays a significant role in the adoption and use of technology. Younger healthcare providers are more comfortable with technology than their older counterparts.

In this study, the majority of participants were also young professionals.

Advanced age was also associated with resistance to change. Technology adoption has the potential to significantly alter work processes, procedures, and interactions. The old midwives, on the other hand, are prone to resist change if they are unhappy with it. The participants in this study showed a high level of opposition to the introduction of e-health systems in public hospitals. Some said they were used to manual kinds of work and the fact that they were soon to retire, they never welcomed anything that could alter their comfort. Similarly, Bennani, Belalia, and Oumlil (2018) discovered that medical personnel become resistant to the use of technology and advised that medical workers must overcome certain obstacles, such as change resistance, to incorporate ICT into their work procedures.

4.2.2. *Attitude and the unavailability of digital infrastructure*

4.2.3. *Midwives attitude*

The move to use digital technologies was broadly associated with participants' attitudes toward the technology. Participants' discussions about the use of digital technology were framed by perceptions of difficulty in the use of technology, unavailable technologies, high costs of purchasing, aging effects, lack of exposure, and the need for more experienced users. This was in line with previous research on technological innovation, which found that perceived ease of use of digital technology has a significant positive impact on actual usage and adoption of new technology Godoe and Johansen, 2012. It also highlighted several cognitive and interpersonal stumbling blocks to adoption.

The way individuals think about digital technology, including operational variables and their attitudes about innovations in general, are consid-

ered cognitive elements. This is in line with his research into disturbed routines, team learning, and the implementation of new technologies in Asian hospitals, Edmondson (2012) found that cognitive and operational factors were at the forefront during the implementation of technology. Interpersonal elements, such as the impact of key individuals on change management, were also discovered, which are similar to the findings of this study.

Digital technologies were also perceived to be incongruent with current midwifery care. The results suggested that participants believed the adaptation and implementation of digital technology would increase interventions and result in a more medicalized process of midwifery care. This was in agreement with Abejirinde (2018), who in the study of diagnostic and clinical decision support systems discovered that digital technologies must be sustained and integrated into routine use for both patients and healthcare professionals through initial and refresher training of users, technical and supervisory support, trust in decision recommendations, and well-resourced health systems.

Together with Källander et al. (2013), they argued about improving the expanding presence of mobile technologies and phones among health workers, especially midwives. Mobile health can be implemented to deliver improved and increased healthcare services to mothers and communities around

In summary health facilities in Uganda are still lacking a lot of digital technologies appliances, for example, some hospitals have got only one Computer connected to the internet to serve the whole hospital, they lack internet, two patient monitors in general hospitals with individual smartphones being the most common digital technologies available in all hospitals. However much the health workers are ready and willing to use these digital forms in their day-to-day management of patients they are still faced with numerous challenges hindering their use. These digital forms are used to offer services like mother monitoring, vital observations, online consultations (especially on social media platforms), education, information sharing, advice, making consultations, and

others. The present research reveals the important aspects that gear they use or hinder the use of digital technologies and, if responded to, health will be greatly improved for the betterment of humanity in our country Uganda.

Conclusion

The study was aimed at exploring the willingness and readiness of midwives to use digital technologies in midwifery practice.

According to the study findings, the majority of the midwives were informed about digital technologies because they were able to define and mention examples. They also reported having started using some, like smartphones, with the view that the integration of these technologies into midwifery practice will ease their work, many patients can be attended to in a short time both physically and virtually, improve their knowledge, offer tele-midwifery, improve consultations, and fasten information sharing during patients' care with other colleagues aimed at improving healthy mothers.

The participants indicated readiness to use digital technologies in their practice to improve the standard of patient care. While few were uncomfortable with it, perception, attitude, and availability of these digital technologies affected the readiness to use them. Lack of training, advancing age, unavailability of technologies, their costs and data, and attitudes, on the other hand, limited the readiness to adopt these digital technologies. Digital technologies, in particular, the use of smartphones with their mobile applications (social media platforms, training, health monitoring, etc.), the internet, computers, patient monitors, projectors, and digital blood pressure machines were reported to be available, though in small numbers. In conclusion, midwives practicing midwifery are slowly adopting the use of digital technologies in their practice to help improve health, they only need to be encouraged and facilitated where the need arises.

5. Limitations of the study

The research sites were limited to tertiary health facilities in the Buikwe district, which was a limitation of the study. As a result, the findings may not apply to different healthcare settings or hospitals. Furthermore, there were just a few midwives and important informants, making it difficult to generalize the findings.

In both healthy facilities, a maximum of two to three midwives was found on duty during the time of data collection. Since they were busy, this ended up prolonging the time of the interviewees. The need to build midwifery professional strength and capacity was stressed to increase the workforce.

6. Recommendation

According to the finding, the researcher recommends the following:

1. The government should provide more of these technologies. For example, patients monitor in major departments of obstetrics and gynecology like the highly dependent unit, labor suit, and theater.

2. ICT should be taught with an emphasis in medical schools, and graduate healthcare providers should participate in e-health training sessions as part of their in-service training.

3. Subsidize mobile data costs and the market price of smartphones

4. Internet access is promised in major departments, and free internet access for research purposes will be provided.

5. Training of health workers will be facilitated on how to use the digital technologies on the market today to offer care. For example, the use of digital technologies for video conferencing and online classes for midwives and obstetricians to update their knowledge of evidence-based midwifery care will be facilitated.

6. There should be hospital policies dictating the dos and don'ts that promote appropriate patient care.

7. Begin digital technology campaigns to educate midwives and others about a variety of tasks that can be completed quickly and safely online.

8. Improve midwives' human resources by recruiting more midwives and practicing staff retention

9. Proposed plans by the government should be executed on time and limit delays in the installation of important devices in hospitals.

10. Research on factors affecting social media use in midwifery practice should be conducted to evaluate it

10. Study about patients' adoption and consumption of digital technology can also be done

7. Acknowledgment

8. List of Abbreviations.

ICM International Confederation of Midwives

HDU Highly depended unit
MoH Ministry of Health
WHO World Health Organization
UK United Kingdom
LLMICS Lower Level Middle Income Countries
UN United Nations
SDGs Sustainable Development Goals

9. Source of funding.

10. Conflict of interest

None

11. Publisher details:

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