EXPERIENCES OF REGISTERED NURSE MIDWIVES WITH E-LEARNING MODE FROM EKWENDENI COLLEGE OF HEALTH SCIENCES MALAWI

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A thesis Submitted to the Faculty of Health Sciences in partial fulfillment of the requirements for the award of the degree of Master of Science in Nursing Education

(Clinical Teaching)

FACULTY OF HEALTH SCIENCES

DEPARTMENT OF NURSING AND MIDWIFERY

MZUZU UNIVERSITY

APRIL, 2025

Declaration

I, the undersigned declare that this thesis titled "Experiences of Registered Nurse Midwives with E-learning mode from Ekwendeni College of Health Sciences, Malawi" is entirely my original work. This thesis has not been presented for any award at any university within or outside Malawi and Africa. Acknowledgements have been made where other people's work has been used.

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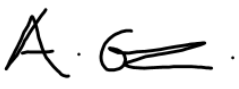

Certificate of approval

We, the undersigned, certify that this thesis represents the student own work and effort and has been submitted with our approval.

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Acknowledgements

I thank God for his grace and mercy throughout my study

I would like to thank the Research supervisors (Dr Baxter Chirambo, Dr Lucky Mhango and Mr Andrew Chilikutali) for the guidance and support throughout the outset of this research work.

Special thanks are due to my husband, Emmanuel, for the financial and moral support rendered throughout my study. To my daughter, Tusayiwe, I appreciate for your prayers and understanding since you sometimes missed motherly love during my period of study and research work.

The following members of staff at Mzuzu University deserve to be recognized for the support they provided during my period of study and research work: Ms Alice Konyani, Associate Professor Thokozani Bvumbwe, Associate Professor Mbakaya, Dr Aubrey Chaputula and Mr Maloto Chaura.

The author would like to thank all Registered Nurse Midwives who agreed to participate in this research. The description of their learning experiences through E-learning mode during the upgrading programme has helped me to have an in-depth understanding of the topic.

Dedication

I dedicate this work to the two important people in my life: My husband who advised me to work hard no matter the circumstances, and my late dad who worked hard and made great sacrifices to educate me.

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List of abbreviations

AMREF : African Medical and Research Foundation

CPD : Continuing Professional Development

DHO : District Health Office

E-center : E-learning center

ECOHES : Ekwendeni College of Health Sciences

E-learning : Electronic learning or web based learning

ESCOM : Electricity Supply Corporation of Malawi Limited

HDU : High Dependency Unit

ICT : Information and Communication Technologies

MTL : Malawi Telecommunications Limited

MZUNIREC : Mzuzu University Research Ethics Committee

NMCM : Nurses and Midwives Council of Malawi

NMT : Nurse Midwife Technician

NONM : National Organisation of Nurses and Midwives in Malawi

RNM : Registered Nurse Midwife

TNM : Telekom Networks Malawi

Abstract

Introduction

Literature has reported global experiences with E-learning Nursing Education. However, little is known about the experiences of Registered Nurse Midwives with E-learning nursing education in Malawi. The aim of the study, was to explore the experiences of Registered Nurse Midwives with E-learning mode from Ekwendeni College of Health Sciences. The study was conducted to understand the platforms and applications used during E-learning, and factors that facilitated and affected learning through E-learning mode.

Methodology

Objective: To explore the experiences of Registered Nurse Midwives with E-learning mode from Ekwendeni College of Health Sciences.

Design: This study utilised the qualitative descriptive phenomenological approach. Data were collected through in-depth interviews in English and Chichewa language using semi-structured interview guide. Chichewa language was used by some participants when responding to some questions. The interviews were audio recorded and transcribed verbatim into English. Data collected were analysed manually using thematic analysis.

Participants: 11Registered Nurse Midwives were purposively sampled and recruited in the study after giving consent.

Setting: The study was conducted in eleven health facilities where registered nurses who completed the E-learning upgrading programme worked. The setting included all levels of health service delivery systems in Northern and Central regions of Malawi.

Results

The study findings reveal that Registered Nurse Midwives used online and offline applications and platforms during their learning through E-learning mode. Data from RNM also showed that motivation and commitment, support systems and self discipline were factors that facilitated learning through E-learning mode. Inspite of that, RNM also reported that they experienced enormous challenges during their learning through E-learning mode. The challenges were: family and work responsibilities, lack of information and technological skills, inefficient internet

connectivity, unreliable power supply, financial constraints, lack of support and E-learning being a new phenomenon in nursing education at diploma level.

Conclusion

There are various experiences of registered nurse Midwives with E-learning mode. This implies that Nurses and Midwives have to embrace the professional core values of commitment and hard work in order to attain higher professional qualifications, improve quality of service delivery and E-learning nursing education in Malawi. The study findings also accentuate the need for the profession to have a collaborative partnership with Information and Communication Technology service providers in order to ensure efficiency and efficacy of the E-learning in Nursing Education.

Key words: Experiences**,** Registered Nurse Midwives, E-learning mode, Ekwendeni College of Health Sciences.

CHAPTER ONE

INTRODUCTION AND BACKGROUND INFORMATION

1.0 Introduction

Electronic learning (E-learning) is a form of distance education that uses computers and internet as the delivery mechanism, with at least 80% of the course content delivered online (Langegard, et al. 2021). E-learning is the learning facilitated and supported by information and communication technologies to enable people to learn anytime and anywhere (Serevina, et al. 2022; Kaushal, 2020). This learning mode requires the use of electronic technology or device by teachers and learners in order to deliver content, support and enhance both learning and teaching using synchronous and asynchronous instructional methods (Langegard et al. 2021). In synchronous, there is an immediate communication between the students and the online teacher or online teachers and students coming online at the same time for lectures. In contrast, asynchronous E-learning is a self-directed learning that occurs at any time and place determined by the learner and does not rely on a teacher to be present. Students and teachers do not come online at the same time (Lawn, et al. 2017). E-learning is one of the most commonly used teaching methods that allow learning to take place despite a physical separation between the students and the educators. It incorporates Information and Communication Technologies (ICT) into the learning process (Hu, et al. 2022). Students learn theory courses at any time and place as long as they have access to an ICT device and a Wi-Fi or data connection (Kotoua, et al. 2015). The other names of E-learning are online education, cyber schools or distance learning, web based learning, computer assisted or aided instruction, internet based learning, multimedia learning, technology enhanced learning and virtual learning (Lawn, et al. 2017; Regmi & Jones, 2020).

The advancement in information, communication and technology is a positive step towards evolution and change (Serevina et al., 2022; Zalat,et al. 2021). ICT has increased the use of digital devices in formal and non-formal education (Basak, et al. 2018). E-learning has emerged as a powerful medium of learning, and it has been adopted in higher education (Al-Fraihat, et al. 2020). Recently, E-learning has become part of the main stream in Health Sciences Education; medical, dental, public health and nursing (Regmi & Jones, 2020; Ali, 2016). In the nursing

profession, ICT has had a profound influence on nursing education and practice (Yangoz, et al. 2017). ICT has enabled transitioning from traditional face to face classroom to E-learning mode of nursing education (Regmi & Jones, 2020). It is advantageous to use E-learning in the modern world because it is flexible as it allows students to study in their free time. A student can decide to study at night, in the morning or in the afternoon (Langegard et al., 2021). In addition, students do not need to resign from their jobs during the training, students can have online studies on their own, the course materials are available online 24 hours a day and can be accessed at any time convenient to them. E-learning promotes continuous professional education through online resources (Ramos-Morcillo, et al. 2020). There are no strict rules as to when a student should go online and study (Regmi & Jones, 2020). There is no pressure from other students, and the student can have enough time to think about what to write. Students can have classmates from all over the world and work with them. Additionally, there are no travel expenses involved as students can just log on and study. With E-learning, students with babies do not need to look for babysitters to look after their babies as they attend classes (Lawn et al., 2017; Kotoua et al., 2015).

The use of E-learning in higher education institutions and the nursing profession is rapidly growing and is here to stay. However, most of the studies on use and experiences on E-learning mode were done on medical students during the COVID-19 pandemic. Nevertheless, learners have different experiences on E-learning with regards to platforms and applications used, enablers and hindrance of the learning approach. To date, study findings on the experiences of Registered nurse Midwives with E-learning mode in Malawi is lacking despite report supporting that E-learning in the Malawian Nursing Education Sector has been attempted (Wallace et al., 2021; Bvumbwe & Mtshali, 2018). It is, therefore, essential to explore the experiences of registered nurse midwives with E-learning mode from Ekwendeni College of Health Sciences. This evidence has the potential to inform the Regulatory body, training institutions, Academicians, researchers and the nation to improve on policies and strategies towards E-learning mode to ensure effective teaching and learning, career advancement and quality nursing practice.

1.1 Background information

Historically, traditional classroom teaching and learning approach has been the mainstay of the nursing education programme. The approach was used by Florence Nightingale in modern nurse

training and continues to be valued as a strong methodology in nursing education (D'Antonio & Clark, 2022; Gruendemann, 2011). However, Gallegos,et al. (2018) findings indicated that the traditional face to face approach in teaching and learning was ineffective because it limited student engagement, and did not encourage active participation. Moreover, face to face mode of education for qualified nurse midwives who are already working is difficult due to: workloads, limited time, geographical location, costs and insufficient learning opportunities (Alfaleh, et al. 2023). The emergence of online educational programs in 1989 at University of Phoenix showed profound influence on students' engagement and learning (Lawless, 2018). Online education continued to grow as more Universities and Colleges began experimenting in the early to mid 1990s. In 1999, the term E-learning was coined by Elliot Maisie, marking the first time the phrase was used professionally. From the 1990s, the world started adopting online learning approaches across different learning contexts due to positive results of ever-expanding influence of ICTs on Education (Barrot, et al. 2021; Lawless, 2018). In 2002, Council of European Union held a meeting in Europe and mapped the current use of electronic forms of learning. It spread knowledge about the new form of teaching and improvement of education systems. It also recommended that all member countries should define the material basis of enhancement of new forms of teaching mainly in the new courses and programmes of universities after succeeding in a sub-project; Open and Distance Learning Network (ODL NET) for Exchange Experiences. The European Union facilitated contact with other countries to exchange experiences among all users of online teaching, improve its quality by using new learning and methodical approaches, and inform the academic society about technological development in the area of education on internet (Hubackova, 2015).

Since the beginning of this millennium, the introduction of E-learning at universities has progressed at a fast pace until now (Lawless, 2018). In Africa, the first online university was founded in 1996 as a project of the World Bank to improve cyber education. It was set up in Ethiopia together with six other African countries, including; Ghana, Kenya, Uganda and Zimbabwe. More positive results of E-learning together with the pedagogical approach were reported from Universities (Hubackova, 2015). Enrollments in online courses is still growing, and is here to stay hence educational institutions are challenged to meet the demand while continuing to provide quality education (Kentnor, 2015). In developing countries, the phenomenon of E-learning as a pedagogical tool became evident in 1999. It was known as computer-based training programme (Nkamwesiga, 2017). Since then, online education

continued to grow as more Universities and Colleges embraced the teaching and learning approach (Hubackova, 2015).

The rapid developments and growth of Information and Communication Technology have had a profound influence on nursing education and practice (Yangoz, et al. 2017). In 2008, the Institute of Medicine made a recommendation that innovation in nursing education programme, especially on change of curriculum and education delivery method, was key in addressing ubiquitous shortage of nurses (Billings, et al. 2012). Online learning in nursing profession promoted lifelong learning, continuous professional development and provision of evidence-based nursing care (Gallegos, et al. 2018). E-learning approach has become an important alternative to traditional face to face education (Basak, et al. 2018; Yangoz, et al. 2017). Online learning has had a significant effect on education in the 21st century thereby becoming indispensable in nursing education (Atout, et al. 2022). Transitioning to E-learning education in the nursing profession is advantageous. It offers learners' opportunities for; flexibility, interaction and collaboration distinctly different from face-to-face learning environments while attending to priority work and family issues (Regmi & Jones, 2020). E-learning has been used by universities and colleges providing tertiary education (Hubackova, 2015; Barrot, et al. 2021; Atout et al., 2022).

In Malawi, the transformation of nursing education from traditional face to face classroom to E-learning approach started between the years 2006 to 2016 by Kamuzu College of Nursing. It was a response to Malawi government's call to increase the number of registered nurse midwives (Masache, 2016). In Malawi, a registered nurse-midwife (RNM) is a nurse who has been endorsed by Nurses and Midwives Council of Malawi (NMCM) as an RNM. The endorsement follows successful completion of an integrated university diploma in nursing and midwifery programme. A registered nurse is a nurse who has successfully completed a university diploma in nursing programme and has been endorsed by Nurses and Midwives Council of Malawi as an RN . Conversely, a qualified nurse-midwife technician (NMT) is a nurse endorsed by Nurses and Midwives council of Malawi after successful completion of an integrated college diploma in nursing and midwifery programme (Nurses and Midwives council of Malawi (NMCM), 2016). RNMs are equipped with analytical and critical thinking skills (Bvumbwe & Mtshali, 2018).

Initially, the E-learning approach was used to train and double the number of registered nurse midwives at degree level (Masache, 2016). According to a recent report by the World Health

Organisation, Malawi has a density of 0.33 nurses per 1000 population, and the number of nurses and midwives declined by 17% between 2005 and 2018 (Ahmat et al., 2022). Considering the shortage of RNMs and the Malawi Government's call to increase the number of RNMs, NMCM developed a syllabus for E-learning upgrading programme for RNMs. Since then, more Universities and Colleges started enrolling Nurse Midwife Technicians (NMT) into E-learning upgrading Registered Nurse Midwives programmes. E-learning for registered nurse midwife is a new phenomenon and is growing. . Ekwendeni College of Health Sciences is one of the Christian Health Association of Malawi (CHAM) Colleges that embarked on a two years e-learning upgrading programme for RNMs. The College started the E-learning programme in 2018 by training 23 RNMs through e-learning mode. Twenty one RNMs successfully completed the 2 years e-learning upgrading programme during the time of the study. One withdrew from the programme while the other one was repeating a semester. The government of Malawi has recommended E-learning approach in its Health Sector Strategic Plan III (2022-2030) document. The government is optimistic that E-learning could promote effective, efficient and equitable health service delivery by improving availability, retention, performance and motivation of human resources for health (Malawi, Ministry of Health, 2022). Even though E-learning has been attempted, it appears to meet resistance (Bvumbwe & Mtshali, 2018). The resistance might be attributed to reported global experiences with E-learning Nursing Education. Nevertheless, the use of ICT and applications to increase student engagement in theoretical Nursing courses require further assessment in order to optimise student learning experience, and ensure quality nursing education and practice (Gallegos,et al. 2018). It is essential, therefore, to explore the experiences of registered nurse midwives with E-learning mode from Ekwendeni College of Health Sciences, Malawi.

1. 2 Problem statement

Nursing education programmes are traditionally conducted in a face to face classroom learning environment that includes hands on experiential learning (Wallace, et al. 2021). The traditional face to face approach of teaching and learning has been the backbone of nursing education in Malawi. Transformation from the traditional face to face to E-learning upgrading programme from NMT to RNM is a new phenomena and it is growing. Adoption of E-learning platform for upgrading nursing programmes in Colleges and Universities is a response to government call and

pressure to increase the number of registered nurse midwives in order to meet the demand of the Malawi Health Sector (Masache, 2016).

Initially in Malawi, the new approach was used to train registered nurse midwives at degree level but now it is also being used to train registered nurse midwives at diploma level. Nursing educational institutions are challenged to meet the demand while continuing to provide quality education using the new approach. Ekwendeni College of Health Sciences is one of the training institutions that embarked on E-learning upgrading RNM programme in 2018. It used asynchronous mode of delivery. The institution used the syllabus and curriculum for diploma programme approved by Nurses and Midwives Council of Malawi. The curriculum had stipulated teaching strategies and assessments methods to be used in order to; optimize student learning experiences, ensure quality nursing education and practice. However, information on the experiences of registered nurse midwives with E-learning mode in Malawi in terms of enablers and barriers is scanty. Therefore, the proposed research aims at exploring the experiences of registered nurse midwife with E- learning mode from Ekwendeni College of Health Sciences.

1.3 Study objectives

1.3.1 Broad objective

This study explored experiences of Registered Nurse Midwives with E-learning mode from Ekwendeni College of Health Sciences.

1.3.2 Specific Objectives

1. Describe the platforms and applications used during the E-learning upgrading programme.
2. Explain the factors that facilitate learning using the E-learning mode.
3. Describe the barriers of learning using E-learning mode.

1.4 Significance of the study

The results of this study would likely improve policy making, nursing education, research and practice.

Policy making

The findings of this study could inform the Regulatory body (Nurses and Midwives Council of Malawi), Ministry of Healthy, in particular, the Nursing and Midwifery Directorate, training institutions, academicians, researchers and the nation to improve on policies and strategies towards E- learning nursing education programme in Malawi. This could result into effective teaching and learning and continuous professional development.

Nursing Education

The new knowledge about experiences of registered nurse midwives in terms of E-learning applications and platforms, enablers and challenges may help Nurses and Midwives Council of Malawi, academicians and training institutions including Ekwendeni College of Health Sciences to review the syllabus and curriculum of E-learning Nursing programme. The results from the study on enablers and barriers of E-learning and ways of improving the new learning approach may provide information and understanding on effectiveness and efficiency of the curriculum's teaching methods and assessment strategies. The study findings may be used in making some modifications in the current curriculum on the design (pedagogical approaches, content breadth and depth) in order to improve teaching and learning experiences as well as nursing education. The revised curriculum containing the improved design will optimise students' learning experiences in Colleges and Universities.

Research

The study findings may provide the nurse educators and researchers with base line information for replication in order to have enough evidence for effective and quality online nursing education programme.

Practice

The findings of this study on suggested ways of improving E-learning could inform Nurses and Midwives Council of Malawi and Ministry of Health to facilitate collaboration with ICT services providers and health facilities. The collaboration would lead to attainment of cost effective and reliable internet connectivity by Nurses and Midwives who are obliged to continuous professional development that results into provision of quality evidence based nursing and midwifery practice.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This literature review is a critical analysis of existing reports on experiences with e-learning mode. The review aimed to describe and understand studies thoroughly on experiences with e-learning mode using different search strategy. The literature review chapter includes: the search strategy, information on e-learning mode, applications and platforms used in e-learning mode, Factors facilitating and affecting learning through e-learning mode. The chapter provides implication of the literature on the study and summary

2.1 Literature search strategy

An electronic literature search was conducted using both CINAHL and Research4Life mainly HINARI databases. These data bases yielded a total of 450 articles. After a review of the titles and abstracts, articles that reported on experiences with online or e-learning, learning experiences with e-learning or online learning during COVID 19 and experiences of students with online learning or e-learning were read in totality. The articles that were reviewed were within a time frame of five years. This was done to ensure that relevant and current literature was reviewed and also, to determine relevance of the present study. However, other articles and documents that were not within the five years timeframe depending on the importance of the information were also reviewed and used. However, during the literature search, it was discovered that no much had been published on experiences of registered nurse midwives with e-learning mode in Malawi.

2.2 Literature review on E-learning

Literature showed that electronic learning (E-learning) is a form of distance education that uses computers and internet as the delivery mechanism, with at least 80% of the course content delivered online (Langegard et al., 2021). E-learning is the learning facilitated and supported by Information and Communication Technologies to enable people to learn anytime and anywhere (Dhir, et al. 2017: Serevina, et al., 2022; Kaushal, 2020). E-learning is one of the most commonly used teaching methods that allow learning to take place despite a physical separation between the students and the educators. It incorporates Information and Communication Technologies (ICTs) into the learning process (Hu,et al. 2022). The increasing availability of

technology devices continues to change the teaching –learning landscape including technology supported learning (Gause,et al. 2022).The use of electronic technology or devices by teachers and learners facilitate delivery of content, support and enhance both learning and teaching using synchronous and asynchronous instructional methods (Langegard, et al., 2021). In synchronous instruction, there is instant communication between the students and the online teacher or online teachers and students coming online at the same time for lectures. In contrast, asynchronous E-learning is a self-directed learning and occurs at any time and place determined by the learner and does not rely on a teacher to be present. Students and teachers do not come online at the same time (Lawn, et al. 2017). Students learn theory courses anytime and place as long as they have access to a device and a Wi-Fi or data connection (Kotoua et al., 2015). The other names of E-learning are online education, cyber schools or distance learning, web based learning, computer assisted or aided instruction, internet based learning, multimedia learning, technology enhanced learning and virtual learning (Lawn et al., 2017; Regmi & Jones, 2020).

The advancement in information, communication and technology is a positive step towards evolution and change (Serevina, et al., 2022; Zalat, et al. 2021). ICT has increased the use of digital devices in formal and non formal education (Basak, et al. 2018). E-learning has emerged as a powerful medium of learning and it has been adopted in higher education (Al-Fraihat et al., 2020). Recently, E-learning has become part of the main stream in Health sciences education; medical, dental, public health and Nursing (Regmi & Jones, 2020; Ali, 2016). In nursing profession, ICT has had a profound influence on nursing education and practice (Yangoz et al., 2017). ICT has enabled transitioning from traditional face to face classroom learning to E-learning nursing education (Regmi & Jones, 2020). E-learning is a common method of continuing education for nurses that support professional competencies and attainment of learning needs (Steven's,et al. (2020). It is advantageous to use E-learning in the modern world because; it is flexible as it allow students to study in their free time. A student can decide to study at night, in the morning or in the afternoon (Langegard et al., 2021). In addition, the students do not need to resign from their jobs during the training, students can have online studies on their own, the course materials are available online 24 hours a day and can be accessed at any time convenient to them. It promotes continuous professional education through online resources (Ramos-Morcillo,et al. 2020). There are no strict rules as to when a student should go online and study (Regmi & Jones, 2020). There is no pressure from other students and

the student can have enough time to think about what to write. Students can have classmates from all over the world and work with them and there are no travels expenses involved just log on and study. With E-learning, student with a baby do not need to look for babysitters to look after their baby as they attend classes (Lawn et al., 2017; Kotoua et al., 2015).

Numerous studies have been carried out globally and continentally on experiences of students with E-learning approach in Health Sciences Education before and during COVID-19 pandemic (Langegard et al., 2021; Ramos-Morcillo et al., 2020; Regmi & Jones, 2020). The study findings have showed numerous platforms and applications used in E-learning as well as factors that facilitate and hinder online learning.

2.3 Platforms and applications used in E-learning mode

University teaching methods have evolved and almost all higher education institutions use e-learning platforms to deliver courses and learning activities (Khaldi, et al. 2023). Studies have reported on different platforms and applications used in E-learning. A study conducted in Indonesia at state university of Jakarta on developing online lesson plan using project based learning model on optical materials revealed that Google meet was the application used in online learning (Serevina, et al., 2022). Similarly, in Jordan Universities, a cross-sectional study was conducted to explore the situation of distance E-learning, identify possible challenges, limitations, satisfaction and perspectives for E-learning among medical students during their clinical years amidst COVID -19 pandemic. The findings showed that ZOOM, Microsoft teams, WhatsApp groups, Face book groups, YouTube channels, Moodle and Skype were the platforms and applications used in E-learning (Al-Balas et al., 2020). Correspondingly, Gause et al., (2022) integrated review on technology usage for teaching and learning in nursing education reported Cloud computing applications and platforms. The applications included YouTube, Google Apps, Dropbox and Twitter. This means that there are different platforms and applications used in online learning that are recommended by training institutions depending on the feasibility of the platform. Despite the increased enrollment in E-learning upgrading nursing programmes from NMT to RNM in Malawi, literature revealed scant information on platforms and applications that are used on the E-learning mode for nursing education. Therefore, in order to ensure effective online teaching and learning in Malawi's Nursing education, it is necessary to determine the platforms and applications used in training nurses from NMT to RNM from those

registered nurse midwives who had undergone through E- learning nursing education programme.

2.4 Factors facilitating learning through E-learning mode

Studies have indicated that effectiveness of online teaching and learning is dependent upon the availability of success factors or drivers (Al-Balas et al., 2020; Al-Fraiha et al., 2019; Ali, 2016; Regmi & Jones, 2020). A quantitative empirical study on E-learning systems success at one of the United Kingdom's universities revealed that online teaching and learning is effective when there are success factors or drivers (Al-Fraihat et al., 2020). In this study, five hundred and sixty three students engaged in E-learning evaluated the E-learning systems success. The findings showed that success of E-learning is facilitated by availability of quality technical, information and support system, learner and instructor perceived usefulness of the course. Similarly, a systematic literature review of twenty four published medical literature on E-learning in Health Sciences Education by Regmi & Jones' (2020) reported enablers of E-learning. The results revealed that interaction and collaboration between learners and facilitators, learners' motivation, user friendly technology were enablers of the learning mode. The above findings are in line with those made in a qualitative cross sectional study conducted by Bai, et al. (2020) on ten older Chinese aged above fifty years. The study explored the facilitators and barriers for older people to adopt E-learning services in a Chinese City. The findings of the study showed that user friendly technology, family support and work flexibility facilitated adoption of E-learning. In Malaysia, a cross-sectional study at a public university examined readiness, enablers and barriers to E-learning among medical students during COVID-19. The study covered one hundred and seventy eight medical students. The findings indicated that students' self discipline and availability of at least one learning device and learning space at home facilitated the success of the learning mode (Roslan & Halim, 2021). Similarly, a cross-sectional web-based study on medical students' acceptance and perceptions of E-learning during the COVID-19 closure also revealed the enablers of E-learning. The study involved three hundred and forty medical students from King Abdulaziz University. The results of the study indicated that educator's good E-learning skills, instructional design, interaction, motivation and good learning management systems were enablers of E-learning (Ibrahim et al., 2021). The above study findings are similar to Ebener, et al. (2020) research findings at Graz University of technology in Australia. The study described the situation of an Australian University regarding E-learning before and during the first three weeks of the changeover of the teaching system. The results showed that availability of functional learning management systems, benchmarking from other universities doing

well with E-learning, preparation of lecturers and flexibility of academic and ICT personnel were factors that facilitated the success of the E-learning mode. However, the above studies were done on medical students and not specifically on nurses. Most studies were done during and after COVID-19 school closure. It is therefore necessary to describe the enablers of E-learning in nursing education.

A cross-sectional survey on barriers and facilitators of E-learning courses in palliative care on the island of Ireland also revealed the facilitating factors of E-learning. The study was conducted on healthcare professionals working in palliative care. The findings indicated that quick technical and administrative support, computer training before E-learning course, regular contact with the Tutor in online course work were important facilitators of online learning (Callinan, 2020).

Similarly, a systematic literature review on factors that promote E-learning at the University of Pretoria, South Africa brought forth enablers of E-learning. The study investigated a range of factors that directly affect the quality of web supported learning opportunities. The results showed that institutional, technical, pedagogical, instructional, lecturer and student' factors were critical success factors for quality E- learning (Fresen, 2021). However, the facilitating factors were not described in details.

In contrast, in Malawi a systematic literature review's findings on E-learning in Malawi's higher education institution with comparable analysis from findings in other developing countries revealed another enabler. The findings indicated that successful implementation of the E-learning systems in Malawi requires the government to invest more financial resources, develop and implement appropriate policies and regulations to support E-learning programmes. The study recommended government's provision of seed capital to universities with performance based budget allocation mechanism. The initiative would; encourage more innovations, competition and efficiency, provide special scholastic fund targeting needy students so that they can acquire reliable technological gadgets to be used in online learning (Gama, et al. 2022). Furthermore, the study suggested efficient internet connectivity, downward revision of rates charged on internet connectivity and orientation to information literacy courses prior to E- learning as facilitators of E-learning. However, there are scant research findings on enablers of E-learning in nursing education.

2.5 Factors affecting learning through E-learning mode

Studies have demonstrated several factors affecting E- learning approach even before the pandemic (Wallace et al., 2020). Systematic review of twenty four published articles on E-learning in Health Sciences Education (el-HSE) from 1980 through 2019 revealed barriers of E-learning. The study showed that E-learning was affected by: lack of information technology skills, poor motivation, costly, unmet personal and professional goals, limited flexibility, lack of students' self-discipline and low self-efficacy, poor interactions between learners and facilitators and minimal use of demonstration teaching method. The study identified and synthesized the factors (enablers and barriers) affecting el-HSE reported in the medical literature. Nevertheless, the study pointed out that there is unavailability of good research on E-learning with focus on specific practice areas (Regmi & Jones 2020).

In Pakistan, a qualitative study that examined issues and challenges encountered by students on distance learning pointed out barriers of online learning. The findings indicated that family and work responsibilities, time constraints, difficulties in concentration, teacher's incompetence, lack of course assignments and project, improper evaluation of given assignments and poor record keeping were hindrances to E-learning. The study involved twenty-five students enrolled in five distance learning programmes (Niwaz, et al. 2019). Similarly, a cross-sectional survey conducted in New York on more than 800 college students with an aim of understanding the challenges students face with online learning revealed barriers of the approach. The findings indicated that poor internet connection, lack of motivation, diminished physical-social interaction and poor time management due to distractions and additional responsibilities were the main challenges of E-learning (Klawitter, 2022). However, the study did not specify whether the students were studying Nursing and Midwifery or other Medical programmes.

In addition to these findings, findings of a cross-sectional study by Al-Balas et al. (2020) at Jordanian universities revealed that internet streaming quality and coverage was the main challenge to the E-learning approach. The study involved six hundred and fifty-two students and was aimed at exploring the situation and possible challenges of E-learning among medical students during their clinical years amidst COVID-19 pandemic.

However, implementation of E-learning nursing education programme in Malawi for the Registered Nurse Midwives started before the COVID- 19 pandemic. Therefore, a detailed picture of the challenges being faced is not clear hence this study.

In Spain, findings of a qualitative descriptive research conducted at two public Spanish Universities showed that; older students especially women and mothers lacked most of the basic digital competences, electronic resources and internet connections while nurse educators were under pressure to meet academic requirements while at the same time performing other day to day roles (Ramos-Morcillo, et al. 2020). The reported challenges affected learners' ability to adequately follow the lessons. The aim of the study was to discover the learning experiences and expectations on E-learning education during the COVID 19 pandemic. Likewise, study findings of a descriptive phenomenological study of eleven pre-licensure nursing students at a University in the Pacific Northwest conducted by Wallace et al., (2020) also reported challenges of E-learning. The study aimed at understanding the lived experiences and perceptions of students' transition to remote learning during the spring 2020 semester. The results showed that lack of technology infrastructure and technology support, deteriorating student faculty relationship, lack of office hours and increased responsibilities from academic and family affected time management and E-learning. Nevertheless, results of a mixed methods research of one hundred and thirty-two nursing students at Gothenburg University in Sweden indicated that reduced possibility for students' social interactions in their learning process which resulted into reduced motivation was the major challenge (Langegard et al., 2021). The study sought to describe and evaluate nursing students' experiences of the pedagogical transition from traditional campus based to distance learning using digital tools.

In Ghana, Arthur-Nyarko & Kariuki's (2019) analytical survey of five hundred and seventeen students from two Distance Education Institutions revealed one drawback of the E-learning approach. The hindrance was lack of sustainable source of electricity supply as there was unreliable power supply. In spite of that, students had smart phones and computers and were able to access internet in diverse places and devices. The aim of the study was to investigate learners' access to resources for E-learning and its influence on preferred E-learning mode of delivery.

Arthur-Nyarko & Kariuki's (2019) findings are similar to those made in a study conducted by Zalat, et al. (2021) on medical staff members at Faculty of Medicine; Zagazig University Sharkia

Governorate in Egypt. The study estimated and evaluated challenges and factors influencing acceptance and use of E-learning as a tool of teaching within higher education during COVID-19 pandemic. The findings showed that insufficient and unstable internet connectivity, inadequate computer labs, lack of computers or laptops and technical problems were the challenges affecting the E-learning mode. These findings correspond with those made in a case study done in Sub-Saharan Africa by Kotoual, et al. (2015). The study investigated the behaviour and experiences of Ghanaian and West African country students on E-learning programmes. The results showed that lack of computers and internet, lack of infrastructure facilities installed with computers and networks, financial crisis and reliance on foreign donors and strikes by teachers were the challenges of the learning mode.

The study findings by Kotoual et al. (2015) are similar to those made by Feldacker et al. (2017) in an online survey of Health Care Workers who completed the University of Washington School of Medicine online course on clinical management of HIV in Sub-Saharan Africa. The study aimed at understanding clinicians' experiences and perceptions of online Continuing Professional Development in Sub- Saharan Africa. The results showed that unreliable, slow or limited internet connection and lack of time were major challenges of the approach. Correspondingly, a multi-institutional descriptive cross-sectional study of two hundred and ninety-four Kenyan Health Science students by Sarna et al. (2022) also reported challenges. The study determined the perspectives of Kenyan Health Science students toward E-learning in a bid to enhance effective learning during the COVID-19 pandemic and beyond. The findings indicated that unreliable internet connection and lack of motivation were the major challenges of the E-learning approach. However, the study did not specifically focus on student nurses' perspectives toward E-learning.

In Malawi, Chawinga & Zozie's (2016) case study findings showed that; delayed feedback on assignments and release of end of semester examination results, absence of information for courses of study, poor communication between the Centre of Open, Distance and e-Learning (CODeL) and departments including poor remuneration for lecturers were the challenges associated with the E-learning approach. The study involved three hundred and fifty open and distance learning (ODL) students and nine Heads of Department in the Faculty of Education at Mzuzu University (MZUNI). The study sought to understand instructional systems used, and benefits and challenges of ODL programmes. However, the study's participants were students

and Heads of Department in the Faculty of Education and not the Nursing Department because by then ODL was only offered by Faculty of Education. The implementation of E-learning upgrading nursing education programmes might have different challenges because the programmes are traditionally conducted in a face-to-face learning environment that includes hands on experiential learning (Wallace et al., 2021).

Correspondingly, a randomised controlled trial study findings at Mzuzu University revealed three major challenges to the implementation and sustainability of electronically mediated programmes (Mastellos et al., 2018). The challenges included: lack of infrastructure for ICT, lack and inadequate supply of electricity and network coverage especially in rural areas. The study involved forty Health Surveillance Assistants. It sought to assess the effectiveness of traditional versus blended learning approach on Community Health Care Workers' (Health Surveillance Assistants') knowledge, attitudes and satisfaction on the use of information, communication and technologies in Malawi. Nonetheless, the study participants were not Nurses and as such might have minimal knowledge on ICT as compared to nurses because of the difference in the entry requirements into the profession/job, responsibilities and remuneration.

2.6 Implications of the literature on the study

The reviewed literature indicates e-learning is the learning facilitated and supported by ICT to enable people to learn anytime and anywhere. It is a common method of continuing education for nurses that support professional competencies and attainment of learning needs while fulfilling work and family responsibilities. Therefore it is essential to understand the experiences of registered nurse midwives with e-learning mode in Malawi. An understanding of the registered nurses' experiences with e-learning mode will help to improve e-learning nursing education programme. The knowledge about experiences with e-learning mode will help in the review of the syllabus and curriculum that would improve teaching and learning experiences in Malawi.

This literature review shows that there are different platforms and applications used in e-learning depending on training institution's feasibility. In addition, the reviewed literature indicates various experiences with the e-learning mode. In order to understand the experiences with e-learning mode, this study was guided by the updated Delone and McLean model of information systems success. The adapted model has five constructs namely: systems quality, service quality,

information quality, user satisfaction and net benefit. The constructs have an interdependent relationship that contributes to success or benefit of utilizing the information systems on an individual or organisation. Delome and McLean information systems success model stipulate that systems quality, information quality and service quality are antecedent of user's level of satisfaction that results into the success (net benefits) of different stakeholders (individual or organisation). In order to understand experiences with e-learning mode, the study modified and applied the Delome and McLeans adapted information systems success model. The study considered systems and service quality as knowledge on e-learning mode and factors facilitating e-learning while information quality are factors that affect e-learning. These factors are antecedent to the users' level of satisfaction with e-learning mode that would result to optimum student learning experiences with e-learning mode (net benefit). Therefore, it is imperative to discuss the platforms and applications feasible in e-learning nursing education in Malawi. The information will promote effective teaching and learning, and continuous profession development that will improve patients' care. Besides, most studies have been carried out globally during COVID-19 pandemic and most of the participants are medical students. Arguably, the pandemic can have negative implications on e-learning mode in terms of preparations, platforms and applications used enablers and barriers to e-learning mode. This can lead to different experiences with e-learning mode. To ensure effective online teaching and learning in Malawian nursing education, it is necessary to determine platforms and applications and explain enablers and barriers to e-learning. In addition, few studies have focused on registered nurse Midwives' experience with e-learning mode globally, continentally as well as in Malawi despite the increased enrollment in E-learning programmes. This study explored the experiences of registered nurse midwives with E-learning mode and targeted those who learnt from Ekwendeni College of Health Sciences.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter introduces the concept of research methodology that includes: study design, study site, target population, sampling, inclusion and exclusion criteria, sample size, data collection tool, data analysis, ethical considerations and study limitations.

3.1 Study design

This study utilised a qualitative descriptive phenomenological approach. Qualitative descriptive research helps a researcher to have a deep understanding of the phenomenon as it exists in its natural settings (Polit & Beck, 2014; Willig, 2008). The descriptive approach involves a systematic, interactive and in-depth approach that yields subjective and rich data used to describe human experiences (Speziale & Carpenter, 2011). The approach aims to develop concepts that can help a researcher understand the social phenomena in natural settings, emphasising the meanings, experiences, views of the participants and providing an in depth understanding of real-world problems (Groenewald, 2004). In descriptive phenomenological design, researchers seek to understand and describe the universal essence of a phenomenon as it exists in its natural settings (Polit & Beck, 2014; Willig, 2008). The researcher investigates the everyday experiences of human beings while suspending his or her preconceived assumptions about the phenomenon (Groenewald, 2004; Creswell et al., 2017). Descriptive phenomenological design is one of the most commonly used methodologies in qualitative research within the Social and Health Sciences (Groenewald, 2004; Willig, 2008). In this study, the researcher wanted to understand and describe the phenomenon of E-learning mode as experienced by Registered Nurse Midwives from Ekwendeni College of Health Sciences. The researcher also wanted to reflect on the description of E-learning in Nursing Education with reference to existing study reports about the phenomenon.

3.2 Study site

This research was conducted in eleven health facilities selected based on availability of Registered Nurse Midwives who upgraded their professional certificates or qualifications through E-learning mode from Ekwendeni College of Health Sciences. These health facilities are; Mzuzu Central Hospital, Kasungu, Karonga, Rumphi and Nkhatabay District Hospitals,

Atupele Mission Hospital in Karonga, St John's and Mzambazi Mission Hospitals, Mzuzu and Khunga Health Centre and Matiki rural private clinic (Dwangwa). Seven hospitals are found in the Northern Region whereas two hospitals are found in the Central Regions of Malawi. Mzuzu Central Hospital, Rumphi and Nkhatabay District Hospitals, including Mzuzu and Khunga Health Centre are public hospitals with cost free services while Atupele Mission Hospital in Karonga, St John's and Mzambazi Mission Hospital are run by Christian Health Association of Malawi (CHAM) and clients pay to access their services. Matiki Rural Private Clinic in Dwangwa is run by Illovo Sugar Company and clients pay to access the services.

The researcher considered all levels of health service delivery systems in Malawi in the study setting so as to have diverse lived experiences of workplace-based E-learning. The selected study sites helped the researcher to understand the nature of the setting where participants learnt through E-learning mode from Ekwendeni College of Health Sciences especially during the learning from home period. In this study setting, there was no health facility from Southern and Eastern Region of Malawi because of the unavailability of a registered nurse midwife who had learnt through E-learning mode from Ekwendeni College of Health Sciences.

3.3 Target population

This study targeted the population of all 2018 e-learning upgrading Registered Nurse Midwives intake who completed the E-learning upgrading programme from Ekwendeni College of Health Sciences. In this study, the targeted population was twenty-one Registered Nurse Midwives who completed the two year upgrading programme from Nurse Midwife technician to Registered Nurse Midwife through E-learning Mode from Ekwendeni College of Heath Sciences. However, using the purposive sampling, the researcher verbally invited eleven potential participants and all expressed their interest to participate in the study.

3.4 Sampling

This study used purposive sampling technique to recruit participants for in-depth interviews. Purposive sampling is a form of non-probability sampling that helps to recruit participants who are knowledgeable about the phenomena under study (Polit & Beck, 2014). Purposive sampling enabled the researcher to engage participants with rich descriptions of the experiences of learning through E-learning mode in order to achieve the study objectives. The researcher also recruited informants basing on their; willingness to participate in the study, availability during the time of data collection, gender and level of the health facility they were working from. This

helped the researcher to capture all the experiences with E-learning mode from all levels of health facility and gender.

3.5 Inclusion and exclusion criteria

3.5.1 Inclusion criterion

The study participants' inclusion criterion was:

i. Registered Nurse Midwife trained through E-learning mode from Ekwendeni College of Health Sciences and completed the programme.
ii. Willingness to participate in the interview.

3.5.2 Exclusion criterion

The exclusion criterion was

i. Registered Nurse Midwife who has not yet completed the E-learning upgrading programme from Ekwendeni College of Health Sciences.
ii. Registered Nurse Midwife who completed the E-learning upgrading programme from other colleges and institutions.
iii. Registered nurse midwife who completed E-learning programme from Ekwendeni College of Health Sciences but not willing to participate.

3.6 Sample size

This study used a sample size of eleven participants who expressed their interest to participate in the research. Cresswell (2017) recommend that a sample size of three to ten participants is sufficient to reach data saturation in a qualitative phenomenological study. In this study, the sample size of eleven informants was sufficient to generate rich data on the study of the E-learning phenomenon. The sample size consisted: one informant from Mzuzu Central Hospital, one from, Kasungu, Karonga, Rumphi and Nkhatabay District Hospitals, St John's, Mzambazi and Atupele Mission Hospitals, respectively, one from Mzuzu and Khunga health center and one from Matiki Private Rural Health Centre. Data saturation was reached with a sample size of seven because the participants were good informants who were able to share the lived experiences with E-learning mode freely. Four more participants were interviewed to further verify data saturation. Data saturation refers to instances when the researcher fails to identify any new data from the participants (Moule & Goodman, 2014; Creswell et al., 2017).

3.7 Data collection tool

In this study, data collection tool was a semi-structured interview guide (appendix C). The interview guide was developed for this research by modifying Zalat, Hamed and Bolbol's (2021) semi structured interview guide. The study objectives and literature review guided the development of the interview guide. The developed semi-structured interview guide was in English, and it had two parts. The tool had open ended questions in which the broad areas of interest (specific objectives) were covered. Polit & Beck (2017) reported that semi-structured interview guide allowed the researcher to prepare a written topic guide, which is a list of open-ended questions that was covered with each participant. In this study, the first part of the semi-structured interview guide contained questions aiding in collecting demographic data for participant's identification. The Second part had open ended questions that were formulated according to the study objectives. The main thematic areas for open ended questions were contained in the second part and were: platforms and applications used in E-learning, experiences with E-learning platforms and applications, factors that facilitated learning using E-learning mode, factors that affected learning using E-learning mode, and ways of improving E-learning. In this study, the use of semi-structured interview guide with open-ended questions encouraged participants to give rich information about their experiences with E-learning mode and when necessary, probing questions were being asked.

3.7.1 Data collection methods

In this study, the researcher collected data from all participants using semi-structured interviews as well as field notes. Data were collected from 3rd April to 25th May, 2023.

3.7.1.1 Semi-structured interviews

The researcher collected data from informants through semi-structured interviews. Semi-structured interviews explore the experiences of participants and the meanings they attribute to them (Tong, et al. 2007). All interviews were conducted in a quiet room at the health facility where a participant was based and learnt through E- learning mode. The researcher explained the details and aim of the study. Participants were asked to read the participant information sheet. Thereafter, participants were asked if there were issues to be clarified or had any questions regarding the study. The researcher answered all questions participants had asked. Then verbal and written consent was obtained. The researcher also informed the participants that the interview will be tape recorded and some notes will be documented on the note book as well as

on the interview guide. The researcher conducted one to one interviews, and encouraged participants to talk about their experiences with E-learning mode from Ekwendeni College of Health Sciences by asking open-ended questions. All the interviews were conducted by the researcher in the participant's workplace (hospital) after getting the consent from the participants. The interviews commenced by confirming each participant that he or she was ready for the interview. The researcher started by obtaining the demographic characteristic of informants. Then the researcher introduced questions on the interview guide and used probing questions to seek clarifications and open up the interview. Some participants were able to tell their experiences freely but some needed a lot of time and considerable prompting. The interview was completed when the participants finished describing their experiences, and the researcher had no more topics to be discussed. The interviews lasted between 30 to 45 minutes.

3.7.1.2 Field notes

In this study, all events of the study were recorded in a notebook as field notes. Every day of the study, field notes were recorded while in the field. Field notes were short notes in form of points that reminded the researcher about events and important things that took place.

3.8 Data analysis

In this study, the raw data from in-depth interviews were transcribed verbatim and analysed manually by the researcher using thematic analysis. Polit et al. (2018) define thematic analysis as a method of identifying, analysing and reporting patterns (themes) within qualitative data. Data analysis began instantly after the first interview session and it was done concurrently with data collection to enable the refining of the questions and interview technique. Data analysis followed the six phases which are: familiarisation with data, generating initial codes, searching for themes, reviewing themes, defining and naming themes and producing the report (Braun & Clarke, 2006)

Familiarisation with data

The researcher familiarised herself with the data by reading and re-reading all the transcripts and listened to the tape recorded interviews multiple times. Tufford & Newman (2022) stated that going through the transcripts several times helps the researcher to familiarise self with data. Then the researcher transcribed verbatim all the interviews (appendix D). The researcher also verified and corrected errors in the transcription by re-reading the transcribed data while listening to the recorded data.

Generating initial codes and identifying themes

After the researcher's familiarisation with data, manual coding of data followed. The interview transcripts were coded manually line by line using pen and paper. The researcher identified and extracted phrases from the data. Interview data was coded starting with no pre-specified codes. Then codes were derived from the data set and grouped into small meaningful chunks of data. The codes were analysed further to come up with categories. The codes were matched up with extracts that demonstrated that particular code. This involved copying extracts of data from individual transcripts and collated with each code. The researcher printed the codes on a small card as shown in figure 1 below. While coding, the researcher constantly compared each interview to previously coded text to see if they were relevant to descriptions by the same or other participant.

The codes with a similar meaning were grouped to form sub-themes, which were further categorized into themes. Two research supervisors in nursing and midwifery department with qualitative backgrounds held several meetings with the researcher to discuss and review the identified themes for a consensus. The supervisors validated the themes that they were a true reflection of the collected data.

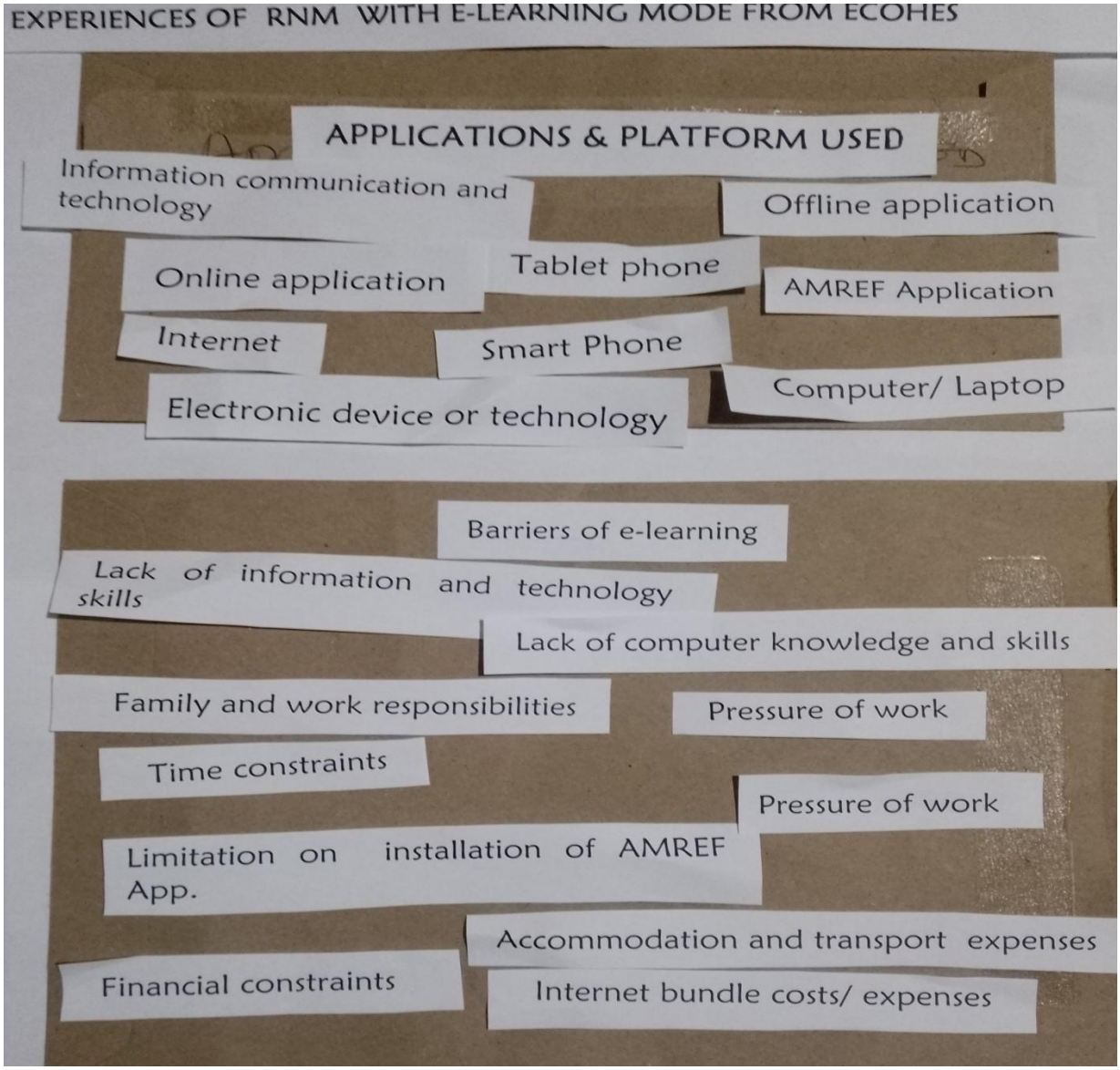

Figure 1: Thematic analysis using codes card and envelopes

The printed code cards were grouped according to similarities and relationships. Codes (cards) that were related were placed in one envelope and each envelope was labeled with a sub-thematic statement. In this study, forty eight codes were identified and condensed into seventeen sub-themes. Considering the similarities among the envelopes labeled with sub-thematic statement, the researcher linked the sub-themes to the apriori thematic areas.

Producing the report

The researcher produced a research report after finalising the data analysis. The report has included data analysis that has been written on the methodology section. In addition, the researcher also included excerpts from the participants on the study results.

3.9 Data Management.

In this study, all the recorded interviews were transcribed verbatim, and were typed by the researcher after data collection in preparation of data analysis. During the interviews, the researcher also wrote some field notes and important information to help in data storage. The researcher saved all the transcripts in Microsoft word format in the researcher's personal computer for further analysis. The computer had a password known to the researcher alone to prevent access to the information by other people. The recorded interviews were transferred to the researcher's personal computer and kept as audio files. The audio files were labeled according to participant's identification number. The files were stored in a password protected folder.

3.9.1 Rigour

Qualitative research focuses on rigour to ensure the trustworthiness of a study (Henry, 2015). To ensure rigour, the researcher followed four recommended principles for promoting the trustworthiness of findings, namely; credibility, confirmability, dependability and transferability (Henry, 2015; Polit & Beck, 2018).

3.9.1.1 Credibility

Credibility is the confidence in the truth of the data and interpretations of them (Polit & Beck, 2014). This study enhanced credibility through the following process described by Henry (2015) persistent observation, member checking and peer debriefing.

The process of persistent observation helps the researcher to identify salient issues concerning the phenomenon being investigated and explore them in detail (Henry, 2015). The researcher isolated salient issues and explored them further during subsequent interviews. Furthermore, the researcher herself collected data through one-to-one interviews and analysed it concurrently to facilitate the isolation of salient issues.

Credibility of the findings was also achieved through a member checking strategy. Member checking is the active involvement of the participants in checking and confirming the results (Birt, et al. 2016). Three interview transcripts were returned to three participants to check and verify the authenticity of the conclusions made from their explanations. All the three participants validated the results to be a true reflection of their shared experiences on E-learning mode.

Peer debriefing is another strategy that enhanced credibility of the research findings. Peer debriefing involves having debriefing sessions with a disinterested peer to explore aspects of the inquiry that might otherwise remain only implicit within the researcher's mind (Henry, 2015). In this study, the research supervisors helped with the debriefing sessions. They are senior faculty members with vast experience and knowledge in qualitative research.

3.9.1.2 Confirmability

Polit & Beck (2018) define confirmability as the data's accurate reflection of the experiences of the participant without being influenced by researcher's prior assumptions or opinions. Confirmability has been ensured through the use of the audit trail which includes; the stored raw data from eleven registered nurse midwives, thematic categories, process notes and interpretations of the results that can guide the readers to trace the data to their source.

3.9.1.3 Dependability

Dependability is the practice that ensures that the research findings are consistent and could be repeated (Polit & Beck, 2018). To achieve dependability of the data, the researcher has reported in detail all research processes; research methods, data collection and analysis within the study to allow other researchers to replicate the work and produce similar results.

3.9.1.4 Transferability

Transferability of findings refers to whether or not the qualitative results are relevant to other settings or other groups of people (Polit & Beck, 2018). To achieve transferability, the researcher has reported clearly the methodology, participants and their contexts so that the reader can judge how transferable the results are to other settings.

3.10 Ethical considerations

In this research, the following ethical issues were addressed: Research and ethical committee approval, obtaining informed consent, maintaining confidentiality and anonymity, privacy and issue of interviewer-interviewee power relations. These ethical considerations ensure that the researcher respects the rights of participants (Polit & Beck, 2018).

3.10.1 Research and Ethical committee approval

This research was approved by Mzuzu University Research Ethics Committee (MZUNIREC) and the reference number is MZUNIREC/DOR/23/30 (See appendix A).

3.10.2 Informed consent

Before participation, verbal and written informed consent was sought from individual participants. Informed consent is the process of providing adequate research related information to people in order to enable them to voluntarily decide whether or not to participate as participants (Manti & Licari, 2018). In this study, the researcher briefed participants on the study aims and procedures. During the briefing, the researcher allowed the participants to ask questions for clarification and an opportunity was granted to withdraw participation at any time during the study. Participants who expressed their interest to participate in the study were further provided with a written study information and consent form (see appendix B). The text of the consent form was read out to each participant. Participants consented to participate in the study by signing a consent form. Furthermore, participants were advised that their participation was voluntary hence had the right to withdraw at any point without any consequencies.

3.10.3 Confidentiality and anonymity

This research ensured anonymity of participants through the use of codes instead of participant's names. The use of codes helped the researcher to ensure that no participant was identified through the information obtained from them that would be made public. Furthermore, publication of information obtained from them would not relate to the participant's name and real identity. This study also achieved confidentiality by keeping all the audio taped information and hard copies of original transcripts in a lockable drawer. The data was made open for scrutiny by relevant personnel involved in the research process. After data analysis, the transcripts were kept with utmost confidentiality. Furthermore, all electronic files of transcribed interviews were securely stored in password protected files and computer. The transcribed interviews will be

destroyed after completion of the master's programme. Participants were also assured that the recorded information would be destroyed upon completion of the study.

3.10.4 Privacy

In this study, all interviews were conducted in a quiet room and in a dignified manner in the nurses' office at the hospital where a participant was based during E-learning upgrading programme. The participants had already arranged with other nurses to observe some privacy during the interview period. The door of the office was kept closed throughout the interview period. The interviews were done at low voice in such that other people outside the room could not hear the conversation. The researcher recommended all the places to have provided privacy during interviews.

3.10.5 Interviewer-interviewee power relations

This study managed interviewer-interviewee power relations by conducting the interviews in the workplace of participants. The researcher allowed participants to choose the venue of interview and this shifted the power relations in favour of the participants. In addition, participants were free to refuse or withdraw from the study at any point after giving consent.

3.11. Dissemination of results

The manuscript containing part of the study findings has been submitted to Malawi Nursing and Midwifery Journal for publication. Currently, the manuscript is under review. Besides, study findings will be presented to MZUNI during research seminars and conferences at the institution. In addition, a copy of the final thesis will be submitted to: Mzuzu University Research and Ethics Committee (MZUNIREC), Mzuzu University and Ekwendeni College of Health Sciences libraries for archiving and access. Some of the findings will be disseminated at the conferences both locally and internationally.

3.12 Actual study limitations

This study had its own limitations. Firstly, this being a qualitative study, subjectivity in the data analysis and interpretation cannot be overruled. Nevertheless, the involvement of experienced qualitative researchers from Mzuzu University in data analysis and validation of the findings by participants enhanced the affirmation on credibility of the results.

The other limitation is that results of this study may not be applicable to RNMs in other countries because the study recruited eleven RNMs who advanced their professional certification through E-learning mode from Ekwendeni College of Health Sciences. The study sample size is small as compared to the study population, and this can affect generalization of the results. In addition, the study found that the RNMs that participated in the study were the first cohort to advance the professional certification from Nurse Midwife Technician to RNM through E-learning mode from Ekwendeni. As such, the study findings could differ with what may be obtained from subsequent groups and other settings.

Lastly, a thorough discussion and comparison with the opinions of other authors on E-learning for Registered nurse midwives locally has not been possible due to paucity of information on the topic of study locally. This study serves as one of the pioneers that offer information on experiences of Registered nurse midwives with E-learning mode. In spite of the limitation, the results of this study will be made available for readers to decide on generalisability to a similar perspective based on the methodology and the available study findings.

3.13 Conclusion

This chapter has indicated the research approach and design undertaken for this study. It has also documented the process of participant recruitment, data collection and analysis, trustworthiness of data and ethical issues. The research findings are presented in the following chapter.

CHAPTER FOUR

PRESENTATION OF FINDINGS

4.0 Introduction

This chapter presents findings from the study on the experiences of Registered Nurse Midwives with E-learning mode from Ekwendeni College of Health Sciences. The results are presented under the following major sections: participants' demographics, themes and subthemes. Themes of the findings were developed from the study objectives while subthemes emerged from analysed data. The study findings have been supported by verbatim excerpts from participants' narratives.

Eleven participants from different level of health facilities in the Northern and Central part of Malawi participated in the study. Five participants were males while six were females. In terms of age band range; one male was aged between twenty-six to thirty three years, two males and females were aged between thirty-four and fourty-one years respectively, one male and three females were aged between forty-two to forty-nine years and one male and female were aged fifty to fifty seven years respectively. All the study participants were married, and had same years of work experience at Registered Nurse Midwife level.

The findings on the level of health facility where the participants worked revealed that seven worked in public hospitals with cost free services, three worked in Christian Health Association of Malawi (CHAM)/mission hospitals, and one worked in a private hospital where clients pay for the services. Among the seven participants who worked in public hospitals, one female worked at a central hospital, four worked at a district hospital, and among the four, three were males and one was a female. Two females worked at a public urban health center. For the three participants who worked in Christian Health Association of Malawi facilities; two males worked in a community hospital while one female worked in a mission hospital. In terms of additional responsibilities, eight participants had additional responsibilities of which five were males and three were females. The reported responsibilities were; programme coordination and ward in-charge. In terms of the gender and participants' responsibility they had; three males and one female were programme coordinators respectively; one male was a ward in-charge and one male and two females were responsible for both programme coordination and ward in-charge. Table 1 below depicts the characteristics of the study participants.

Table 1: Characteristics of study Participants

Participants	Gender	Age range	Marital status	Type of health facility	Additional responsibility
Participant # P1-M-3-04	M	26-33	Married	District Hospital	Deputy in-charge HDU & Coordinator of Palliative care Programme
Participant # P2-M-10-04	M	34-41	Married	District Hospital	Clinical Mentor, Preceptor, Helping Babies Breathe Coordinator and Labour Ward Quality Improvement Chairperson
Participant # 1-F-17-04	F	34-41	Married	District Hospital	None
Participant # 2-M-26-04	M	34-41	Married	Community mission hospital	Baby friendly hospital initiative (BFHI) and Visual Inspection with Acetic Acid (VIA) Coordinator
Participant # 3-F-8-05	F	34-41	Married	Urban health centre	None
Participant # 4-M-10-05	M	42-49	Married	District hospital	Fistula Coordinator
Participant # 5-F-16-05	F	42-49	Married	Central hospital	None
Participant # 6-F-17-05	F	42-49	Married	Mission hospital	Deputy in-charge of maternity ward, CPD coordinator and chairperson of hot meal
Participant # 7-M-23-05	M	50-57	Married	Community hospital	In-charge Maternity ward
Participant # 8-F-25-05	F	42-49	Married	Private rural hospital	HTC (HIV Testing and Counseling) Coordinator
Participant # 9-F-25-05	F	50-57	Married	Urban health centre	In-charge Maternity Ward and Coordinator of School Health Initiative and Nutrition (SHIN) programme.

The findings presented in participant' demographics depict that participants were different in terms of age, level and ownership of the health facility they were based at, and additional responsibilities they had during the time they learnt through E-learning mode from Ekwendeni College of Health Sciences. The additional responsibilities, level of health facility they worked with and their age differences contributed to different experiences with learning through E-learning mode.

4.1 Themes and subthemes

The study findings reflect five main themes which have been deductively developed from the objectives. Subthemes emerged during the thematic analysis of data that was guided by Riessman's (1993) approach of thematic analysis. There were 48 codes that were identified during data analysis, and the codes were labeled and condensed into seventeen subthemes (See Table 2).

Table 2: Themes, subthemes and codes

Theme	Subthemes	Codes
1. Applications and platforms used during E-learning upgrading programme	Online application and platform	Technological applications
		Electronic devices
	Offline application and platform	AMREF Application
2. Experiences with E-learning platforms and applications	Technical experience	Challenging
		Late submission of assignments
	Information and technological skills	good experience
		orientation and support
3. Factors that facilitated learning using E-learning mode	Motivation and commitment	Internal motivation
		Commitment
	Support systems	Facilitators and administrative support
		Family support
		AMREF support ICT technical support

		Peer support
		Power backup
		ICT technical support
	Self-discipline	Proper time management
4. Factors that affected learning using E-learning mode	Family and work responsibilities	Pressure of work
		Time constraints
	Financial constraints	Accommodation and transport expenses
		Internet bundle costs/ expenses
	Lack of information and technological skills	Lack of computer knowledge and skills
		Limited flexibility on installation of AMREF Application
	Inefficient internet connectivity	Erratic internet connectivity
	E-learning is a new phenomenon	New programme with new teaching and learning approach
		Instructional design
		Some outdated information installed on the AMREF Application
		Accommodation / lodging challenges at the campus during face to face
	Unreliable power supply	Inadequate library facility
		Power black outs
	Lack of Support	Pressure of work

5. Ways of improving learning through E-learning mode	Instructional and Application design	Course content and application installation
		Intensify on face to face learning
		Intensify virtual sessions
	Academician, ICT and Librarian Support	Academicians accessibility
		Intensification on skill acquisition and perfection
		Good recording keeping on assessments
		ICT experts and Librarian support
	Technology and E-learning center infrastructure support	Prior orientation to E-learning
		Reliable internet connectivity
		Fully equipped E-learning centres
		Good library
		Power back up
		Accessibility of reference materials
		Submission of assignment in hard copy form at E-learning centres
	More financial resources	Scholarships
		Revision of data bundles cost
		Prior communication regarding programme admission requirements

4.1.1 Applications and platforms used during E-learning upgrading programme

Under this theme, participants were asked to describe the applications and platforms they used during their learning through E-learning mode from Ekwendeni College of Health Sciences. The study findings reveal online and offline applications and platforms were being used during their E-learning upgrading programme. The findings are presented below under two subthemes, namely: online and offline applications and platforms.

4.1.1.1 Online applications and platforms

According to the study findings, some of the participants described that they learnt through E-learning mode by using online applications and platforms. These were technological applications and electronic devices. The applications and platforms required them to have internet or be online in order to access and send the required information and assignments. The following voices illustrate the applications and platforms used during their learning through the E-learning mode:

> *'During our E- learning programme, we used email, WhatsApp and internet. We also had a one to two weeks period of face to face [learning]. Amongst the platforms mentioned, we were mostly using email.' (Participant # P2-M-10-04)*

Participant # 8-F-25-05 added that:

> *'We were using Google most of the times. We used a phone and laptop to download the information for the four whole semesters, and towards the end of the programme, we were given a tablet phone by AMREF. Assignments were sent through WhatsApp or email. We had emails of all tutors.'*

Another participant stated that:

> *'Most of the times I was using phone to search for information of the assignment since my phone had bundle most of the times. I was typing on the laptop thereafter transfer it to the phone and send it through email to the lecturer.' (Participant # 9-F-25-05)*

Similarly, Participant # 1-F-17-04 added that:

> *'The course content was installed in the tablet. We were also using the laptop and internet when we want to Google some information, especially when you have an assignment to work*

on. We were also using the personal mobile phones to access information since we were given the password.'

Another participant stated:

'We had a tablet phone and we still have it. We were also using laptops. We were also using emails to access and upload information and assignments. Sometimes we could use a phone call to ask for clarification on the topic learnt. It was a one-to-one phone call.' (Participant # 4-M-10-05)

The findings presented depict that there are different online applications and platforms that participants used to learn through the E-learning mode. Participant's choice of the application and platform to use for successful learning was dependent on the availability of Internet and voice bundles, accessibility and institutional preference on the applications and platforms.

4.1.1.2 Offline applications and platforms

The study found that an offline AMREF application was used during their learning through the E-learning mode. The AMREF application was loaded with course content. The application was installed online, and once this was done, the course content would be accessed offline. However, the application required internet connectivity to access more information from the cited references. The following excerpt illustrates how the offline application and platform worked:

'I have been using an offline platform. It was an AMREF application loaded with study content. We were also using the general internet to read the in-text references.' (Participant # P1-M-3-04)

These study findings reveal that the majority of the students preferred using online applications and platforms. The offline application and platform was the least preferred.

4.1.2 Experiences with E-learning platforms and applications

The second theme that was deductively developed from the research objectives, and identified in the narrative data analysis was experience with E-learning platforms and application. Under this theme, participants were asked to describe their experience with E-learning applications and platforms during their learning through E-learning mode. The analysis of the narrative data resulted into eight codes that were labeled and condensed into two subthemes, namely: Technical experience and Information and technological skills experience.

4.1.2.1 Technical experience

E-learning mode is a new phenomenon in the Nursing and Midwifery profession in Malawi especially in the Nursing and Midwifery Education programme for Nurse Midwife Technician upgrading to Registered Nurse Midwife. This is manifested on the technical experiences that some participants reported with E-learning platforms and applications. Technical experiences are about experiences on use of technological applications and electronic devices. The participants reported two technical experiences they encountered with E-learning platforms and applications, namely; challenging and late submission of assignments. The following voices illustrate the technical experience of challenges and late submission of assignments through E-learning platforms and applications:

> *'At first it was challenging because it was a new programme, and it was my first time to use those applications.' (Participant # 1-F-17-04)*

It is important to note that when someone is embracing a new phenomenon, the speed of use of the platform and application increases gradually. The following excerpt points out technical challenges on typing speed:

> *'Typing speed was a problem. I could type one page for two days!' (Participant # 7-M-23-05)*

The other participant shared her maiden technical challenge with a laptop. She said:

> *'At first it was difficult to type on a laptop because it was the first time to use this thing.' (Participant # 8-F-25-05)*

Furthermore, Participant # 2-M-26-04 reported:

> *'At first, as we were starting the course, it was a challenge more especially on submitting the assignment, and giving the feedback to the lecturers using the gadgets and emails.'*

Similarly, Participant # 9-F-25-05 narrated:

> '*I had some challenges sometimes. I could not upload the assignments, and sometimes download the information. At first, I thought the problem was with my phone. I could borrow my friend's phone to try sending the assignment but still failed. Then we discovered that it was mostly due to the challenge of internet connectivity, more especially at the facility where I was doing clinical practice.'*

Some participants were unable to submit their assignments in good time due to limited knowledge on the use of E-learning applications and platforms.

> *'Those who were not conversant with the application were unable to submit assignments on time.' (Participant # P2-M-10-04)*

These study findings depict that lack of technical knowledge and skill on the use of technological applications and electronic devices was a core contributor to the technical experience which was challenging and resulted in late submission of assignments.

4.1.2. 2 Information and technological skills experience

Despite E-learning being a new phenomenon in the nursing education upgrading programme from Nurse Midwife Technician to Registered Nurse Midwife, some participants had prior technical expertise on operation of technological applications and electronic devices. The participants' narratives show that they had good experience with E-learning applications and platforms. The following voices illustrate the experiences:

> *'It was a nice experience though there was a need to search for more information on the internet.' (Participant # 3-F-8-05)*

Other participants narrated:

> *'The experience was good. Each topic had references. Some of the referenced books were accessed offline while some books were accessed online.' (Participant # P1-M-3-04)*

> *'Using the tablet and laptop was easy to me.' (Participant # 6-F-17-05)*

Technical expertise on operation of technological applications and electronic devices contributes to effective learning through E-learning mode. This is supported by the following participant's narrative:

> *'It was very nice! We could search information on Google to supplement the AMREF notes. I could send my assignment through an e-mail.' (Participant # 7-M-23-05)*

Some participants reported that their skill in information and communication technology (ICT) improved after being oriented and supported on the use of applications and platforms. Their narratives show that orientation to new phenomenon as well as the associated applications and

platforms prior to use and practice is paramount for a positive experience and successful learning. This is illustrated in the following interview excerpts:

> *'After orientation and practice on using those gadgets, we gained some experiences and got used to it. It was very easy for us to access and send the assignments and other information when needed.' (Participant # 1-F-17-04)*

Another participant had to say:

> *'After an orientation and having undergone an ICT course, we were able to open and type on the laptop. We realised that things were easy.' (Participant # 5-F-16-05)*

Similarly, participant # 8-F-25-05 narrated:

> *'After learning how to operate it, it was just simple and easy. After learning how to operate the laptop, I could type the assignment, convert it to PDF, transfer to phone and send it to the tutor. We had an ICT course during the training. It was the first course to be covered and after that we started practicing how to send the emails and upload information.'*

Participant # 2-M-26-04 added that*: 'As time goes we picked up and then it was ok.'*

Participant # P2-M-10-04 narrated:

> *'After sometime of practicing on how to search and send information, we developed some skills on how to use those platforms. We were able to do our assignments and submit them on time.'*

The study findings show that participants had different levels of knowledge and skills on E-learning platforms and applications prior to and after an orientation to the information and communication technology course. The difference resulted in diverse experiences with the E-learning platforms and applications.

4.1.3 Factors that facilitated learning through E-learning mode

Under this theme, the researcher asked participants to explain the factors that facilitated learning using the E-learning approach. The analysis of the narrative data resulted in ten codes that were condensed into three subthemes, namely: motivation and commitment, support systems and self discipline (See Table 2).

4.1.3 .1 Motivation and commitment

Some participants reported that internal motivation and commitment to learn using the E-learning mode was one of the factors that facilitated their learning. The participants reported that learning using E-learning mode took place while they were fulfilling other important responsibilities hence it required commitment. This is supported by the following narrative from a participant:

> *'Hard work and commitment was another factor. The programme required someone to work hard and be committed since we were learning while fulfilling other roles.' (*Participant *# 3-F-8-05)*

Participant # P1-M-3-04 added:

'There are a number of factors. One, it was a personal desire to learn; yes that is inner thing or motivation. Sometimes I used to explore on the laptop by myself.'

Similarly, participant # 7-M-23-05) reported: *'online learning requires a lot of effort.'*

The results show that participants were responsible for their own learning amidst other important work and family errands. They had to put forth commitment and hard work in order to accomplish their goal of advancement from a Nurse Midwife Technician to a Registered Nurse Midwife.

4.1.3 .2 Support systems

Findings indicate that the support participants received facilitated their learning using the E-learning approach. The support systems included: Facilitators and administration, Family, AMREF, peers, ICT and electrical personnel. The participants' narratives show that the support systems they received gave them an opportunity to learn during the time of power black outs, financial and human resource constraints. This is illustrated in the following interview excerpts:

> *'The facilitators or lecturers assisted us to get into the E-learning platform. They were always available and ready to assist us; both physically and online. We were also assisted by an expert in ICT from AMREF, a lecturer in ICT from the College and fellow students from Malawi College of Health Sciences who were also doing the E-learning upgrading programme.' (Participant # P1-M-3-04)*

Participant # 3-F-8-05 added:

'Our lecturers were friendly. Had it been they were harsh I could have dropped out of the programme. The other factor is support from other institutions that we are surrounded by. I talked of St John's Institute for Health where I was going to access free Wi-Fi. The people there were also friendly.'

Likewise, Participant # 8-F-25-05 reported:

'Despite my workplace being a private rural health centre, I was allowed to get a paid leave during the period when I had no off days to utilise for my studies especially during face to face and clinical practice. I was maintained as one of the Nurse Midwife at the facility throughout my study period and there was no single day when I was told to resign so that I concentrate on my studies.'

Family support is also imperative when learning through E- learning mode.

'The other thing is the support from my family. They assisted me with funds so that I pay for accommodation, buy food and internet bundle during the clinical practicum.' (Participant # 5-F-16-05)

Participant # 7-M-23-05 said:

'The supportive wife. She was encouraging me a lot with advice. In addition, she could source some money and support me with it.'

Participant # 8-F-25-05 also reported:

'The support that I got from the family and my Colleagues from work facilitated my learning using the E-learning approach.'

Participant # 9-F-25-05 also explained:

'My daughter helped me a lot in terms of searching for information for the assignment, typing and editing my work before sending to lecturers. My husband again supported me. He could give me time to work on the assignment.'

Provision of support in terms of electronic devices and funding has been reported as one of the factors that facilitated learning using E-learning mode.

'The second factor is support that AMREF, the sponsor, gave us especially tuition, some gadgets and upkeep allowance. The support relieved the stress of searching for money for school fees and it helped us to somehow concentrate on our studies.' (Participant # 3-F-8-05)

Likewise participant # 4-M-10-05 had to say:

'The other thing that facilitated learning is the provision of tablet phone by AMREF. The phone assisted us very much because it was easy to operate, fast in terms of internet, accessing information and sending assignments. Before the tablet phone was given to us, we had challenges in sending our assignments.'

Participant # 5-F-16-05 also asserts:

'*AMREF supported us financially as it paid for our school fees. This relieved me so much from my financial problem.'*

Support from peers and colleagues during the time of E-learning were reported to have positive impact on E-learning. Some of the participants had this to say:

'Peer to peer learning and support also assisted us to complete the course. Support from our fellow students from other colleges also facilitated our learning.' (Participant # 2-M-26-04)

'Support from Colleagues at the workplace in terms of giving me some time to concentrate on assignments assisted me a lot to finish the programme.' (Participant # 5-F-16-05)

Similarly, Participant # 4-M-10-05 stated:

'They gave us a good environment and time for discussions with students from different schools doing Clinical Practice at the Hospital. This support was also being provided at Ward level as they also accepted to give me the two days off in a week for assignments and group discussions.'

The findings of this study also reveal that the information that colleagues contribute on an assignment have a positive impact on learning using the E-learning approach.

'During the time of learning from home, my colleagues at the work place could assist me with information on some of the assignments. They also gave me some free time like one or

two off duty days to complete the assignments since most of the times I was on duty. There was really support from the work place.' (Participant # 9-F-25-05)

Effective learning using the E-learning mode relied on the availability of technological infrastructures and electronic resources. Participants asserted as follows:

'Our facility was one of the E-learning centres and I was accessing internet from there. The centre also had desktops that I was using to type my assignment and download information.' (Participant # 1-F-17-04)

Likewise, Participant # 3-F-8-05 narrated:

'The other factor is support from other institutions that we are surrounded by. I talked of St John's Institute for Health where I was going to access free Wi-Fi. The people there were also friendly. Had it been to say, they were charging for the internet services, I would not have afforded and the programme would have been very difficult for me.'

The study findings have shown that effective learning using E-learning mode also depends on availability and accessibility of support systems.

4.1.3.3 Self discipline

It is important to note that with E-learning mode, students learn while fulfilling other important responsibilities. A well-disciplined learner, in terms of proper time management, is able to finalize course work in good time amidst those responsibilities. Some participants reported that proper time management was one of the factors that facilitated learning using E-learning mode. This is illustrated in the following excerpts:

'I had to divide my time. When it was time for school, I had to utilise that time for school. If it was time to provide nursing and midwifery care to clients at our hospital, I had to do that. Proper time management assisted me to accomplish school and all multiple roles that I had.' (Participant # 4-M-10-05)

Participant # 6-F-17-05 supplemented:

'It is all about time management. So I had to divide my time. When am at work, I was doing what I was supposed to do. When am at home, I was doing what I was supposed to do but

also I had to spare sometime for school work during learning from home period. When it was time for face-to-face, I was also focusing on school activities scheduled in that period.'

Similarly, Participant # 9-F-25-05 reported:

'The other thing is time management also facilitated my learning. As a mother, I made sure that the home was in order by cleaning the house, making sure that food was available for the family, and going for work. Before the day ended, I made sure that I also had time for my school since I had assignments with due dates.'

The study findings have shown that student's self-discipline is paramount to effective learning through E-learning mode.

4.1. 4 Factors that affected learning through E-learning mode

Study findings reveal that Registered Nurse Midwives experienced enormous challenges during their learning through the E-learning mode. Under this theme, participants were asked to explain the factors that affected their learning through E-learning mode. The analysis of the narrative data produced fourteen codes that were labeled and condensed into seven subthemes, namely: Family and work responsibilities; financial constraints; lack of information and technological skills; inefficient internet connectivity; E-learning being a new phenomenon; unreliable power supply, and lack of support .

4.1. 4 .1 Family and work responsibilities

The study findings suggest that family and work responsibilities impede learning through E-learning mode. Participant's narrative indicated that they had pressure of work and encountered difficulties to spare time for study owing to their family and work responsibilities and commitments. This is illustrated in the following interview excerpts:

'I could experience the pressure of work, more especially when maybe the colleague is sick. I could come and work the whole day not even having some time to read as there were very few of us at the facility.' (Participant # 9-F-25-05)

Participant # 7-M-23-05 added:

'One of the factors that affected my learning through E-learning is pressure of work. I was farming, working and doing school.'

Likewise Participant # 4-M-10-05 reported:

> *'Another challenge was that of simultaneous conflicting of roles. It was being noted that the time when we were reporting for face to face at our college, it was also the time when our duty stations and families needed us more. It was really challenging to concentrate on school during that time.'*

Moreover, the study findings indicated that registered Nurse Midwives already had existing family and work responsibilities before enrolling into the E-learning programme. The course work that included self-directed learning topics and course assignment increased the pressure of work. Some of the participants had this to say:

> *'We had little time for face-to-face, many of the topics were self-directed learning while few topics were assignments. We were working on that while at the same time fulfilling different roles; being a mother, aunt, wife, granddaughter and student. Sometimes at work they would say come and work here. We had a lot of things to do. Sometimes during the one week of face-to-face you could get the news that your granny has died then you have also to concentrate on family issues. So, it was a challenge when you have distractions during the face-to-face time since when that period has ended it was somehow not possible to have your own face-to-face session.' (Participant # 3-F-8-05)*

Participant # 2-M-26-04 supplemented:

> *'We were combining work, school and taking care of the family at the same time. We had a lot of work to do because when it comes to exams they don't necessarily see that this topic was a self-directed content or someone has understood it or not. The exams were coming and they could come!'*

Similarly, Participant # 6-F-17-05 reported:

> *'Sometimes time management was a challenge. When we were on school holiday, we were expected to be at work due to inadequate staffing. However, we also had more assignments and clinical assessments plus case studies to do. If I decided not to report for duty and just go to do clinical assessments, I would be called to go to work. I could leave the assessments and go for work. It was difficult to manage time.'*

The study findings have shown that effective Nursing Education through E-learning mode is affected by pressure of work from family and work responsibilities as well as course work.

4.1.4.2 Financial constraints

The participants' narratives largely reflect that financial constraints affected their learning through E-learning mode. Some of the participants spoke of their financial expenditure being mostly on accommodation and transport during face-to-face period and clinical practice as narrated in the following excerpts:

> *'As for me I had a challenge of finances especially when my clinical allocation was outside my workplace. That meant I needed to have money for transport, accommodation and food and also to support the family. In short, everything needed money. This affected my concentration on school activities.' (Participant # 5-F-16-05)*

Similarly, participant # 9-F-25-05 reported:

> *'The other factor that affected my learning is travel expenses. Since my duty station is a health centre, I was expected to do my clinical practice at a district facility, and this made me to be travelling a lot. During my school off duty days, especially weekends, I was travelling back to my duty station to report for duty. I was spending a lot of money on accommodation and transport unlike our friends who were doing the Clinical Practicum at their duty station; it was cheap.'*

Some of the participants were paying for accommodation even during the COVID-19 school closure, just to secure a place for lodging. The verbatim excerpt below illustrates:

> *'Sometimes it was costly especially during COVID-19. During that time, I was doing Clinical Practicum at the district health facility. When schools closed, I had to travel back to my duty station. However, I was still paying for accommodation which was also expensive just to secure a place. By then we were not yet done with clinical practice. When schools opened, I had to travel back to the clinical practice area.' (Participant # 7-M-23-05)*

The study findings show that lack of finances impede students' effective classroom and clinical learning.

4.1.4.3 Lack of information and technological skills

While some participants had knowledge and skills on technology and electronic devices used in E-learning, it was evident that other participants lacked knowledge and skills on the same. This was attributed to age and lack of exposure to computers. This is illustrated in the excerpts below:

> *'Some of us were 'Born Before the Computers.' So, we had difficulties especially the time we were just starting the programme. We had difficulties in downloading, uploading and sending the assignment. Sometimes I could struggle in sending the assignment to the extent of going beyond the due date.' (Participant # 6-F-17-05)*

Participant # 1-F-17-04 also added:

> *'These things were new to us. It was like we are being introduced now! So it was very difficult for us to start operating the computer and use internet there and then. I could go to the E-learning centre and fail to Google the information for the assignment which we were given. I could come back without accessing any information.'*

The results show that some participants were unable to access and submit the assignment before the due date because of inadequate knowledge and skills on technology and electronic devices.

4.1.4. 4 inefficient internet connectivity

According to the study findings, some of the participants' learning through E-learning mode was hampered by inefficient internet connectivity. Some of the participants encountered erratic internet connectivity when they were uploading and downloading the assignments. The following excerpts illustrate this challenge:

> *'The other problem was poor internet connectivity. Sometimes the network was erratic to complete downloading and uploading the assignment. Sometimes assignments could not be delivered to tutors. I realised this when my name could appear on the list of students whose assignment had not been submitted. So I had to look for it and resubmit. Most of the times undelivered assignments were due to poor internet connectivity.' (Participant # 8-F-25-05)*

Similarly Participant # 6-F-17-05 reported:

'In times of poor internet connectivity at the E-learning centre, it was so challenging to upload and send the assignment to the lecturer, and more difficult if you didn't have money for bundles.'

Some of the participants experienced the erratic internet connectivity even at E-learning centres that were expected to have good internet connectivity. The participants' account indicated:

> *'Erratic internet connectivity in the E-learning centre was a challenge. At first, we were communicated that we will easily access the information on the internet but as time went on the internet accessibility in the E-centre like Mzuzu Central Hospital flopped, and there was no internet accessibility.' (Participant # 4-M-10-05)*

Likewise participant # 3-F-8-05 affirmed:

> *'Sometimes with poor internet connectivity we could search and not access the information. The E-learning centres supplied with desktops and internet in some hospital was not reliable because of erratic internet connectivity. Sometimes those things were not working when at Mzuzu Central Hospital. Nothing was achieved most of the times.'*

Participant # 2-M-26-04 also added:

> *'The challenge of internet connectivity and electricity black out was too much especially at the E-learning centre. Sometimes we could stay for three to four days without electricity, and that affected the learning processes.'*

These study findings reveal that most of the students experienced erratic internet connectivity even at the E-learning centres. The predicament of power blackout worsened erratic internet connectivity.

4.1.4.5 E-learning being a new phenomenon

The study results reveal that advancement of certificate through E-learning mode from NMT to RNM at diploma level in Malawi was a new phenomenon. Being a new programme, it had its own challenges. Participants indicated that their learning was affected because E-learning had its own instructional design, some information uploaded on the AMREF Application were outdated, had accommodation challenges at the campus during face-to-face learning, and the teaching and learning approaches that were used were new. The following excerpts illustrate these issues:

'Firstly, E-learning was a new programme and by then we were not familiar with the internet and laptop. These things were new to us. It was like we are being introduced now! So it was very difficult for us to start operating the computer and use the internet there and then'. (Participant # 1-F-17-04)

Participant # 2-M-26-04 also reported:

'So, it was really a problem because of the nature of the programme which was little time at school for face to face and much of our time at home. The course which we were going through was a bit difficult because we had short period of time at school and spent much of our time at work place.'

Some participants indicated that E-learning was new even to lecturers something that affected their learning:

'This was a new thing to us and tutors as such it was difficult for them to get organised. When we reported for face-to-face sessions, we sometimes could find the tutors not ready to teach and orient us on other things.' (Participant # 8-F-25-05)

Some participants narrated that some of the contents uploaded on the AMREF application were outdated.

'As I said earlier on, the information was somehow outdated. It was sketchy as it had little information that was also outdated. Examples of topics that had outdated information are: management of eclampsia and classification of pneumonia.' (Participant # P1-M-3-04)

Participant # 8-F-25-05 also added that:

'Some courses and topics had outdated information uploaded in the application.'

Furthermore, some participants narrated that there were no electronic skills or procedures and some content were missing in the installed AMREF application. The following excerpts illustrate:

'The other challenge is the unavailability of electronic skills in the uploaded course content. We discovered this when we were in our clinical practice area. There were no videos, no pictures to learn skills from. As upgrading students, we don't learn much of skills in the

clinical area especially at the work place. When we go back to our work place for clinical practice, normally, we work and do not learn.' (Participant # 2-M-26-04)

Participant # P1-M-3-04 also uttered:

'The other drawback was that some content for some topics was not uploaded on the application. You see a certain module is missing but looking at the course outline it required you to learn that module. If the module is not accessed offline then it meant going online to access the content using the internet. It became expensive since we were being charged for the internet.'

Some participants faced accommodation challenge on campus during face-to-face period of learning.

'The other factor that affected my learning was accommodation during face-to-face period. It was difficult to find accommodation at the College's Hostel.' (Participant # 8-F-25-05)

These results show that E-learning at diploma level was a new phenomenon that had its own challenges experienced by students, lecturers and the College.

4.1.4.6 Unreliable power supply

Participants indicated that unreliable power supply in terms of blackouts affected their learning using the E-learning mode. Some participants had to say this:

'The other challenge was electricity black outs. For the past 3 months, we had many blackouts. During the same period we also had assignments with due dates to submit to our different lecturers. Black outs made us sometimes not to submit the assignment in good time. It was a problem so we had to struggle in sending our assignments due to blackouts.' (Participant # 4-M-10-05)

Participant # 7-M-23-05 added that:

'The other challenge was a problem of power supply. It was being experienced when there was no ESCOM electricity, sunlight especially during rainy season and when there was no fuel in the generator.'

Participant # 2-M-26-04 indicated that power blackout was also being experienced at the E-learning centre.

> *'The challenges of internet connectivity and electricity black out were too much especially at the E-learning centre. Sometimes we could stay for three to four days without electricity and that affected the learning process.' (Participant # 2-M-26-04)*

These findings show that power blackout was experienced much by majority of participants during the time of fuel shortages and the rainy season since they had no alternative source of power back-up.

4.1.4.7 Lack of support

While some participants had good support from colleagues at work and lecturers, it was evident that others lacked the support. This was attributed to pressure of work. The following interview excerpts capture this finding:

> *'The other challenge was lack of support from duty station. It was difficult because sometimes we could be on night duty while the face-to-face session was in progress. When we went to class we were just sleeping.' (Participant # 3-F-8-05)*

Participant # 7-M-23-05 also illustrated this:

> *'Sometimes some lecturers could not be reached when we needed clarifications on some of the topics: both physically and online. This challenge was experienced during face-to-face and working from home period as they were also busy with other programmes.'*

The study findings have shown that learning through E-learning mode can be affected by different factors. The factors include: family and work responsibilities, financial constraints, lack of information and technological skills, inefficient internet connectivity, nature of E-learning upgrading programme, unreliable power supply and lack of support.

4.1.5 Ways of improving E-learning in nursing education

Participants were asked to suggest ways of improving learning through E-learning mode. The analysis of the narrative data resulted into sixteen codes that were labeled and condensed into four subthemes, namely: instructional and application design, academician, ICT and Librarian support, technology and E-learning centre infrastructure support and more financial resources.

4.1.5.1 Instructional and applications design

The study findings suggest that improving instructional and applications design would facilitate learning through E-learning mode. Participants suggested that by updating course content, providing unlimited flexibility on installation of applications (AMREF), intensification of face-to-face learning and virtual sessions would improve online learning. Some of the participants described it in this way:

> *'Firstly, the application needs to be updated now and then so that it contains up to date information. In addition, the application should be user-friendly in terms of installation. Everyone should be able to install it. If it means downloading, then everyone should be able to download it. That can be easy. Furthermore, the uploaded course content should be accessed offline once downloaded; one should be able to refer to it or use it for a period of time. This will minimise internet charges. The other thing to improve on is installation and accessibility of the offline platform on smart phones. In times of power blackout, the phone is a bit durable in terms of the power. The battery of a phone as compared to laptop can take you up to 12 hours or more. So when one is studying on a phone during power blackout can do it for 12 hours.' (Participant # P1-M-3-04)*

Participant # 7-M-23-05 also reported:

> *'The other thing is on uploading adequate information on topics whose information cannot be found easily. The information should also be easily accessed through phone.'*

Participant # 3-F-8-05 added that:

> *'In terms of content, all content including electronic skills should be uploaded. When it is already uploaded, you just download, and can refer to it later without using internet. With uploaded electronic skills, a student can easily watch the uploaded video, be able to demonstrate the skill step by step, and refer back when not sure of what to do. Uploading everything could be helpful because you are sure that students will access the required information that will make them to become safe practitioners.'*

Some of the participants suggested that face-to-face learning and virtual session would promote students' understanding of the course content. These participants had this to say:

'Intensify the face-to-face learning because during that period a student is able to ask questions on areas not well understood while they are together with the teacher face to face.' (Participant # 1-F-17-04)

Another participant had suggested this:

'Another thing which you need to improve on is the adoption of synchronous teaching and learning using either zoom or Google class. This virtual class will provide an instant opportunity to ask questions on the presentation, and be answered at the same time because there would be direct contact with the lecturer.' (Participant # 4-M-10-05)

Participant *# 6-F-17-05 added that:*

'I think online tutorials can help since it can be like we are in class and interacting with our lecturer. If there are questions during that time, we ask and get answers at the same time. So the online tutorials, I think can be of help.'

The study results show that most students suggested on synchronous method of teaching and learning through E-learning mode in order to get instant feedback from lecturers.

4.1.5.2 Academic, ICT and Librarian support

The participants' narratives largely reflect that availability of academic; ICT and librarian support could improve learning through E-learning mode. Some participants suggested that: accessibility of academicians, intensification on skill acquisition and perfection, good record keeping of students' assessments, and support from ICT experts and the Librarian could improve learning through E-learning mode. They asserted as follows:

'The other way of improving E-learning is by ensuring availability of lecturers. Most of the times lecturers were not available; both physically and online.' (Participant # 5-F-16-05)

Participant # 9-F-25-05 also suggested that:

'E-learning can be improved by providing technical support to students with challenges in using the application and sourcing of information from the internet so that they should be able to complete the assignments in good time.'

Some participants indicated that support from the health facilities especially line managers is vital in improving learning through E-learning mode.

> *Firstly, the training institutions should educate or orient the Hospital Management on advantages of E-learning. If our managers are oriented on this, it will be easy for them to allow their nurses and midwives to enroll into the programme. If our managers do not know about this programme, they will not allow their nurses to enroll into the programme and resistance will continue.' (Participant # 4-M-10-05)*

Thus, the study findings indicate that availability and accessibility of support system is paramount in E-learning nursing education.

4.1.5.3 Technology and E-learning centre infrastructure support

Based on participants' narratives regarding ways of improving learning through E-learning mode, most of the participants suggested that technology and E-learning centre infrastructure support would facilitate E-learning. Some participants indicated that reliable internet connectivity, fully equipped E-learning centres, good library, availability of power back up, accessibility of reference materials and submission of assignments in hard copy form at E-learning centre would make learners enjoy their learning through E-learning mode. The follow excerpts illustrate these issues:

> *'E-learning is a good platform only that you should just improve on internet connectivity and power. For network, it is all about first talking to the internet service providers like Airtel, MTL and TNM. Because sometimes you find that you want to download something and network is not there. So it becomes difficult. In terms of power liaise with ESCOM so that power should be available all day.' (Participant # 3-F-8-05)*

The study findings also revealed that good internet connectivity should be available at the E-learning centres.

> *'The E-learning centres should have reliable internet connectivity or Wi-Fi.' (Participant # P1-M-3-04)*

Participant # 1-F-17-04 added that:

'There is a need to have stable and sustainable internet connectivity.'

It is important to recognise that some of the participants' narratives demonstrate that when E-learning centres are fully equipped, learning through the E-learning mode is likely to take place. They asserted as follows:

'The best way to improve the E-learning mode is to improve in the E-learning satellite centres. For example, the way Mzuzu University has done by having a big satellite centre close to Karonga TTC. It has got a library, computer lab with internet connectivity and personnel from the College who are based there to support students' learning.' (Participant # P2-M-10-04)

Participant # 4-M-10-05 also added that:

'In terms of erratic internet connectivity, there is need to improve on E-learning centres' internet because internet cannot be everywhere.'

Some participants indicated that cost of bundles should be reduced with availability of reliable internet connectivity at the E-centres.

'The other suggestion is that maybe if there can be E-learning centres with reliable internet connectivity so that students can be utilising it without struggling to find money to buy bundles.' (Participant # 6-F-17-05)

Other participants narrated how power back up could improve E–learning mode and had this to say:

'The E-learning centres should have power back up like generator so that there should be no power interruption during the process of studying.' (Participant # P1-M-3-04)

'In terms of power back up, satellite centres should also have either solar panels or generator so that they should be in continuous supply of power during black outs.' (Participant # P2-M-10-04)

The research findings also show that the accessibility of reference materials to be used by learners could also improve learning through E-learning mode. Participants asserted as follows on this issue:

'The other thing to improve on is the provision of essential books; just few books to students to be using while learning from home. When you are given assignments at home you also need books because books are easy to read as you can even read using torch during blackouts. The books will also be included in your references because you cannot just have websites only. Those books should be submitted back at the end of the course.' (Participant # 3-F-8-05)

Participant # 8-F-25-05 also added:

'Students should be directed to websites where they can download reliable information pertaining to the course whenever they source for information. I understand there are a lot of websites on the internet with incredible information and are for free.'

4.1.5.4 More financial resources

The participants' narratives largely reflect that availability and provision of more financial resources would improve learning through the E-learning mode. Some of the participants spoke of allocation of more financial resources on scholarships, downward revision of internet bundles costs by internet service providers and prior communication to guardians and learners on admission requirement of the E-learning programme. They asserted as follows:

'Firstly, support in terms of scholarship can relieve students' financial burden. With E-learning, the student has to have money to buy internet bundles without which a student cannot access information and lessons.' (Participant # 5-F-16-05)

'Nowadays online learning is growing, and is being adopted even in our universities. Therefore, training institutions should liaise with internet service providers like Airtel and TNM to reduce prices of data bundles for students pursuing their studies through the online mode.' (Participant # 8-F-25-05)

Participant # 2-M-26-04 had this to say:

'The other thing that has to be improved on is the cost of data bundles. The data bundles are very expensive now. I thank God the president is now lobbying for reduction of data prices with internet service providers. With reduced data prices, l think E-learning will be very nice and cheap.'

Participants demonstrated that prior communication on programme requirements to learners and guardians could facilitate good preparation towards learning. Some of the participants said:

> *'I think people should be informed about admission requirements of the E-learning programme or materials to be brought like gadgets earlier.' (Participant # 4-M-10-05)*

> *'I think as students, we need to be prepared. They should prepare us, to say in this programme you are going to buy your own data. It becomes expensive to pay school fees that have a component of internet fee and buying internet bundles. It can be cost effective if students would be buying their own data bundles without paying for internet fee.' (Participant # 2-M-26-04)*

Participant # 9-F-25-05 added that:

> *'I think guardians should ensure that they provide gadgets to their children. Moreover, donor support with gadgets to needy students would also assist.'*

The study findings have shown that quality Nursing education through E-learning mode could be attained once there is an improvement on the: instructional and application design, academician, ICT and Librarian Support, Technology and E-learning centre infrastructure support, and allocation of more financial resources towards E-learning.

4.2 Summary of the findings

The research findings have shown that Registered Nurse Midwives used online and offline applications during their e-learning upgrading programme. The offline application was initially installed online and it required internet connectivity to access more information. The participants had challenging as well as good experiences with the e-learning platforms and applications during the e-learning mode. Those participants with prior technical expertise on operation of technological applications and electronic devices had good experiences. Inspite of the various experiences with the applications and platforms, there were some factors that facilitated learning through the e-learning mode. These enabling factors were: motivation and commitment, support systems and self discipline. The study findings have shown that learning through e-learning mode has its own challenges that affect effective teaching and learning. The reported challenges in the study include family and work responsibilities, financial constraints, lack of information and technological skills, inefficient internet connectivity, unreliable power supply, lack of

support and e-learning being a new phenomenon. Having experienced learning through e-learning mode, the RNM suggested some ways of improving learning through e-learning mode. The study findings suggest that improving instructional and application design, availability and accessibility of support from academician, ICT and librarian, good and well installed e-learning centre infrastructure and more financial resources could improve learning through e-learning mode.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This study aimed to explore the Experiences of Registered Nurse Midwives with E-learning mode from Ekwendeni College of Health Sciences. Learning through E-learning mode is considered a newly adopted approach in the NMT to RNM upgrading programme. In this chapter, the study findings are discussed to reflect a synthesis of all findings with related literature.

The study findings reflect five apriori themes, namely: platforms and applications used during E-learning upgrading programme; experiences with E-learning platforms and applications; factors facilitating learning through the E-learning mode; factors affecting learning through the E-learning approach and ways of improving learning through E-learning mode. Following is the discussion of the research findings on those five apriori themes in the context of research literature and conclusion of the research findings is made as well as recommendations basing on the findings.

5.1 Platforms and applications used during E-learning upgrading programme

The study findings show that Registered Nurse Midwives were using different online applications during their E-learning upgrading programme. The findings indicate that Google, WhatsApp, emails and phone calls were the platforms and applications commonly used during the E-learning. This is in agreement with findings of a study done by Al- Balas et al. (2020) in Jordan Universities which showed that ZOOM, Microsoft teams, WhatsApp groups, Face book groups, YouTube channels, Moodle and Skype were the platforms and applications used in E-learning. This is similar to Gause, et al. (2022) integrative literature review findings on technology usage for teaching and learning in nursing education. The scholars reported that cloud computing which includes You Tube, Google Apps, Dropbox and Twitter are the commonly used technology devices that have improved higher education including nursing education. The narratives from this study suggest that online platforms required learners to have an internet access for them to access and send information. Although E-learning is associated with online platforms and applications, one of the unique findings in this study is that some participants used an offline application. It was an AMREF application already loaded with

course content, and it was accessed offline. However, installation of the application in an electronic device required internet access. Thereafter, it could be accessed offline. The present findings also reveal that asynchronous E-learning was the main modality of delivering the course content during the E-learning upgrading program. This study finding is consistent with the work of Gachanja, et al. (2021) who recommended inclusion of more asynchronous e-learning activities to enhance teaching, learning and improve student's experiences. The authors conducted the study at Kenya Medical training college and found that students struggled to complete synchronous e-learning activities on the e-learning platform. Hence the recommendation. Findings from the current study is contrary to Serevina et al. (2022) who indicated that synchronous online learning through Google Meet was the mode of delivery of course content in Indonesia at State University of Jakarta. Likewise, Al- Balas et al. (2020) study also indicated that synchronous live streaming was the main modality of delivery of education material in Jordanian Universities. Conversely, this study's findings reveal that there was minimal use of synchronous modality in spite of using online platforms and applications. Therefore, the findings in this present study indicate that a positive learning experience through e-learning mode in Malawian Nursing education programme can be achieved by using both online and offline applications and platforms. However, the choice of the applications and platforms to be used during the e-learning mode would depend be based on: Nurses' technical capability to use the application and platform, availability of internet connectivity at their place of residence or work, feasibility of the application and platforms to training institutional and learners, and the stipulated theoretical and clinical course content to be covered within the e-learning programme.

5.2 Experiences with E-learning applications and platforms

This study found mixed experiences with E-learning applications and platforms: challenging and good technical experience.

The findings show that some participants had challenging experiences in operating the ICT devices despite the advancement in information and communication technology in both formal and informal education. The challenging experiences were reported by both male and female participants. This is contrary to prior research findings by Ramos-Morcillo et al. (2020) who reported that older students, especially women and mothers, lacked most of the basic digital competences, electronic resources and internet connections. In this study, both young and older

male and female participants described their challenging experiences with use of electronic technology, especially the laptop and the internet. This is similar to Gachanja, et al. (2021) report that effective online learning is affected by technological challenges. Some participants in the present study described their experience with E-learning applications and platforms as being: new and first time to use the laptop, having difficulties to upload, download and send information, poor internet connectivity and late submission of assignment. Some participants reported that they were slow in typing and could type one page for two days while some could not upload the assignments due to poor internet connectivity. Similarly, Al Sahafi & Moaiad (2022) indicated that lack of computer competence and training for students and teachers affects the use, adoption and implementation of information and communication technology in education. This study finding is consistent with the Mahmoud, et al. (2020) findings on E-learning barriers and opportunities at Benha University in Egypt. The three scholars reported that lack of typing skills were the main barriers to online learning. Finding of this study support the assertions by Langegard et al. (2021) and Alsoufi et al. (2020) who indicated that majority of the technical challenges experienced with E-learning applications and platforms are related to use of digital tools and limitations with the internet. The study findings add unique information about the common belief that, in this twenty first century, there is an increasing global trend of using E-learning in some higher education institutions. In this study, some Registered Nurse Midwives narrated that they were using digital tools, especially the laptop and internet for the first time yet they had already completed their initial Nurse Midwife Technician training programme in various colleges. This challenging experience on the use of E-learning platforms and applications might affect the future preference of the participants to enroll in another E-learning upgrading nursing programme.

Although some of the participants had challenging experience in using ICTs, majority of them had a good experience with E-learning applications and platform. Findings from this study suggest that good experiences from some participant were attributed to introduction of the ICT course and availability of support during their E-learning programme. This finding has been supported by Mahmoud's et al. (2020) study on e-learning; barriers and opportunities from nursing students' perspective. They stated that the provision of computers skills training for students motivates them to learn and enroll in online courses. These results are consistent with the study conducted by Callinan (2020). The scholar reported that positive experiences with E-learning applications and platforms are associated with quick technical and administrative

support, computer training before E-learning course, and regular contact with tutors in the online course. However, studies by other scholars were done during the corona virus pandemic outbreak that led to lockdown and abrupt adoption of e-learning by training institutions. Findings from this study is congruent with Bai et al. (2020) study who stated that user friendly technology and family support facilitated e-learning for older people in a Chinese city. Therefore, it is necessary to ensure that learners are provided with necessary support systems to ensure effective online learning.

In this study, participants described their good experience as nice, easy to use the platform and applications, it was ok, after orientation it was easy, fast and could convert the document to portable document format (PDF). Findings from the current study identify that some participants had good experiences in using the E-learning platform and applications prior to an orientation to ICT while some after an introduction to ICT course. This study finding is consistent with the work of Zalat et al. (2021) who indicated that students have different technological knowledge and skills on E-learning medium. In addition, Alsoufi (2020) reported the need to support Libyan medical students on online learning to ensure integrity and continuity of medical education process. Irrespective of the learners' experiences with e-learning platforms and applications, Al-Fraiht et al. (2020) indicated that students still use the specific platforms adopted by the University or College regardless of its quality. The findings of this study affirm the need for support inform of formal training and orientation on using various technological devices, application and platforms for strengthening use and effectiveness of the E-learning mode in Nursing and Midwifery profession and education

5.3 Factors facilitating learning through E-learning mode

Findings from this study show that motivation and commitment, support systems and self-discipline are factors that facilitated learning through E-learning mode. In the study, participants revealed that their personal desire and commitment to learn through the E-learning mode was one of the factors that facilitated learning. Participants reported that the nature of the E-learning upgrading programme required them to work hard and be committed because they were learning while fulfilling other roles. This study finding is consistent with the Regmi & Jones (2020) systematic literature review findings on E-learning in Health Sciences Education. The two scholars reported that learners' motivation, user friendly technology, interaction and collaboration between learners and facilitators were the enablers of the E-learning mode.

Findings from this study also show that support from: family members, colleagues at work, peers, lecturers, institutions' management, ICT personnel and sponsors facilitate learning through E-learning mode. The results show that the support system provided the support in form of scholarships, finances, time to concentrate on school work, electronic technological devices, information and guidance on course content, power back up and internet accessibility. This study finding shows that the support system is an element that cannot be substituted in E-learning, and is perceived by participants as essential. The study findings of Bai, et at. (2020) and Abbad (2021) support this study finding. They reported that family support, supportive and knowledgeable staff should be available at any time to help students overcome difficulties they may encounter during online learning. Similarly, Marcial (2018) findings in Philippines indicated that commitment, dedication and administrative support are facilitating factors in ICT integration in the classroom. However, the study participants in Marcial's study were educators and not students. The Educators underwent intensive training on the use and integration of ICT in the classroom. Nevertheless, the introduction of an ICT course prior to commencement of other e-learning courses in the e-learning upgrading programme and other nursing programmes in Malawi is paramount in facilitating effective learning through e-learning mode. The knowledge and skills that learners acquire in this course enables them to operate ICT technologies and acquire technical expertise that support online learning.

The study findings also indicate that availability of technological infrastructure and electronic resources is essential for E-learning. In this study, participants described a technological infrastructure as an electronic centre that has: ICT experts, desktops or laptop installed with electronic learning materials/references and reliable internet connectivity. They indicated that availability of E-centers in some health facilities enabled them to access free internet service, search for information on a given assignment, type and send to the lecturers. This finding is also similar with Niwaz et al. (2019), whose study about an exploration of issues and challenges faced by student in distance learning environment indicated that students had distance centers meant for students to access guidance. However, most of those distance centres had no instructors available. Hence, students lacked guidance from instructors at the distance center that affected their learning. This research finding is similar to that made by Wallace et al. (2020) at a University in the Pacific Northwest. They showed that availability of technological infrastructure

and technology support facilitates students' learning through E-learning and effective management of time. Findings of this study is inconsistent with the result obtained by Al-Fraihat et al. (2020) who indicated that full time availability of the IT personnel at the E-centres does not contribute to the usefulness of e-learning system and the utilisation of the system. They reported that availability of technical personnel when needed, who have control over the technology and supports students by providing guidance and training on how to use the e-learning system facilitates e-learning and increases the level of student's satisfaction. Findings of this study support the Nurses and midwives council of Malawi's e-learning nursing education standard to be followed by training institutions embarking on e-learning. The regulatory body recommends the availability of well installed e-learning centers close to students' place of work as one of the requirements to be fulfilled by the training institutions intending to introduce e-learning nursing programme. This helps to minimise students' challenging learning experiences associated with poor internet connectivity. Inspite of the recommendation, Malawi as a country continues to experience intermittent internet connectivity. To solve the challenge, there is need for a collaborative effort from the government, training institutions, regulatory body and internet service providers.

This study also showed that students' self-discipline is also one of the factors that facilitate learning through the E-learning mode. The finding of this study indicates that participants equated self-discipline with proper time management. They described proper time management as the student's ability to allocate time to his or her different roles including the school work while learning through the E-learning mode. Similar to the findings of this study is the report by Hu et al, (2022), who showed that student's self discipline was more crucial for effective completion of learning activities during COVID 19 pandemic home based learning. In addition, prior research report by Klawitter (2022) indicated that self discipline inform of proper time management among college students with additional responsibilities facilitated E-learning. Self-discipline is regarded as one of the students' own factor that facilitates online learning. This study finding is similar to research findings by Roslan & Halim (2021) who indicated that students' self-discipline and availability of learning space at home facilitated the success of E-learning mode among medical students in Malaysia. Self-discipline enables learners to complete course work and assignments in good time. In addition, self discipline requires ignoring

distractions to non academic matters during the time of learning from home. Therefore, the findings in this study show that self-discipline is imperative in online nursing education. Self discipline would allow nurses to effectively learn and complete the e-learning programme activities while completing work and family responsibilities.

5.4 Factors affecting learning through E-learning mode

Findings from the current study have revealed the impediments Registered Nurse Midwives faced during their E-learning upgrading programme. The impediment include family and work responsibilities, financial constraints, lack of information and technological skills, inefficient internet connectivity, power black outs, lack of support and E-learning being a new teaching and learning mode. A number of studies share similar conclusions on impediments faced by students during online learning (Niwaz, et al., 2019; Klawitter, 2022; Wallace et al., 2020). However, most of the prior studies on factors affecting online learning were done during the COVID-19 pandemic that resulted in abrupt transitioning from classroom to online learning due to lockdown. The findings of the studies could be affected by the occurrence of the pandemic and the abrupt change from face to face to online learning. These two factors could affect generalisability and applicability of the findings in the absence of the pandemic.

In the present study, participants started learning through online mode before COVID-19 pandemic. The study revealed that family and work responsibilities impeded their learning through the E-learning mode. They narrated that they experienced pressure of work since they were fulfilling family, work and academic responsibilities at the same time. Hence had no time to rest. Findings of the present study on time constraints, family and work responsibilities are similar to previous research report by Niwaz et al. (2019). These researchers reported that time constraint and responsibilities were the challenges of online learning encountered by college students in Pakistan. This result is consistence with the findings of Klawitter (2022) who indicated that poor time management due to distractions and additional responsibilities were the main challenges of e-learning in New York among college students. One of the unique findings in this study is that the pressure of work was much experienced by the Registered Nurse Midwives who were not in the hospitals' training plan but had enrolled in the E-learning upgrading programme. These participants had inadequate time to rest and concentrate on academic activities, especially during the two weeks of face-to-face learning. Their narratives showed that they worked during the night and would be in class the following morning. This

study also found that the pressure of work was experienced during the learning from home period by all participants. In support of the findings of this study is the work of Bai et al. (2020) who indicated that lack of time by older Chinese aged over fifty years was one of the barriers for older people to adopt e-learning services in a Chinese city. These findings show that irrespective of the age there would always be the challenge of time constraint from the student's perspective. Inconsistent to the present study finding is the work of Ramos-Morcillo et al. (2020) who showed that the challenge of pressure of work was experienced by Nurse Educators. However, their findings might be different with the recent findings because the study explored the expectations and experience of learning through online learning during COVID 19 pandemic.

Findings from this study showed that the predicament of erratic internet connectivity was experienced even at the E-learning centres where it was expected to have efficient internet connectivity. This affirm that erratic internet connectivity is one of the challenges of online learning as reported in prior research work (Moral-Garcia & Ruzafa-Martinez, 2020; Al-Balas et al. 2020; and Arthur-Nyarko & Kariuki's 2019). Literature shows that erratic internet connectivity is one of the challenges of online learning (Klawitter, 2022). Similar to the current findings is the report by Hu et al. (2022), who indicated that technological challenge especially poor internet connection was one of the challenges of e-learning that was experienced by undergraduate nursing students in public funded University in Singapore. Findings of this study go in the same line with Zalat et al. (2021), who reported in their study that their major barrier to e-learning was insufficient and unstable internet connectivity. However, in Zalat et al. (2021) study participants were university medical staff who reported their experiences and challenges of e-learning from their perspective. In addition, Mahmoud et al. (2020) found that slowness of network, system errors and lack of access to e-learning platform were the main technical barriers experienced by students from Benha University. In addition to prior study findings, Malatji & Baloyi (2023) stated that disruption of internet connectivity due to power blackout was a drawback to online teaching and learning at the University of Limpopo in South Africa. Erratic internet connectivity is associated with poor internet streaming quality and coverage which affect learners' ability to adequately follow the lessons and timely submission of assignments (Ramos-Morcillo et al. 2020).

The challenge of unreliable internet connectivity is a national challenge that is well stipulated in the Malawi 2063 Vision document. Nevertheless, Malawi 2063 vision document indicates that

the nation envisages of being well serviced with reliable internet services by 2063 (Malawi National planning Commission, 2020). This shows that the challenge of poor internet connectivity in Malawi will not be among the major challenges of E-learning once the Malawi 2063 vision is attained. However, this challenge will remain for a considerable time amidst shortage of registered nurses. Therefore, there is a need for Malawi government to collaborate with ICT service providers, Nurses and Midwives Council of Malawi (NMCM) and training institutions on coverage of reliable and affordable internet services to increase digital access and adoption of technological learning in nursing education in Malawi. This would facilitate continuous career advancement of nurses through E-learning mode as well as provision of quality nursing and midwifery services.

The findings of this study also showed that lack of information and communication technology skills by participants hindered E-learning. Lack of competence in ICTs affects effective communication and interaction between the student and the teacher (Sahafi & Moaiad, 2022). This study finding indicated that some participants lacked knowledge and skills on how to operate the laptop or computer prior to introduction of ICT course. The participants had expressed that "some of them were born before computers and the computer was new to them. It was difficult for them to start operating it and use internet there and then." The participants lacked most of basic digital competences, electronic resources and internet connectivity. The findings of this study are consistent with Barrot et al. (2021) who indicated that technological illiteracy and incompetence due to lack of knowledge and training in the use of technology were some of the challenges of online learning. This challenge has also been indicated in E-learning for Health Science education by Regmi & Jones (2020). They indicated that E-learning in Health Sciences education is affected by lack of information and communication technology skills by students. Additionally, in this study, some participants described lack of ICT skills with regards to age. The correspondence of acquiring ICT skills with age was also reported in the research work of Ramos-Morcillo et al. (2020). These scholars indicated that older students, especially women and mothers, lacked most of the basic digital competences, electronic resources and internet connections. However, this study found that the challenge on lack of information and technological skills was experienced by both younger and older male and female students; those born before and born after computers. Information and communication technology skills are vital in the process of adopting and using ICT in the nursing education. Therefore, there is a need to have short and intensive courses on usage of information and communication technologies for

both student nurses and nurse educators in Malawi in order to ensure ICT skill acquisition for effective teaching and learning through E-learning mode.

This study found that financial constraints impeded E-learning. It is indicated in this study that participants were shouldering the expenses for accommodation as well as transport during face-to-face time and clinical practice. The financial burden was exacerbated by the requirement to purchase internet bundles since most of the times the E-learning centres had erratic internet connectivity. The report of financial constraints in this study is similar to findings made by Kotoual et al. (2015) and Feldacker et al. (2017). Findings made in the two studies indicated that financial crisis was one of the challenges of online learning experienced by clinicians who completed the medical online course on Clinical Management of HIV from Sub-Saharan Africa. Similarly, findings by Mahmoud, et al. (2020) indicated that expensive internet packages affected online learning. The study was conducted in the Faculty of Nursing at Benha University in Egypt following the COVID 19 pandemic and students had not yet completed the programme. COVID 19 pandemic led to an abrupt switching from classroom based to online learning.

It was evident in this study that the tuition fee for the whole programme was provided by AMREF who was the sponsor. It was anticipated that with this support, the financial constraints would be lessened. However, the study revealed that some participants were breadwinners, and had to source funds to be used by themselves at school and also their family members at home. This finding aligns with Chawinga and Zozie (2016) who found that financial constraints was one of the challenges experienced by majority of students enrolled in ODL programme at MZUNI. The scholars indicated that students had difficulties to pay their school fees because most of them had extended families to look after. In Malawi, it is a common practice that once someone starts working is expected to assume additional relational responsibilities irrespective of the financial stability. The additional responsibilities increase financial constraint to students since they are expected to support their immediate and extended family members and themselves while learning.

The study findings further reveal the challenge of power blackouts being experienced in both urban and rural Malawi. The findings of this study support the previous research reported by

Mastellos et al. (2018). In this study, it was established that lack and inadequate supply of electricity in rural Malawi affected the implementation of E-learning. Findings from other African countries show that power outage is a drawback of E-learning. Malatji & Baloyi (2023) reported in their study that power blackouts in South Africa disrupt internet connectivity that also interrupted online teaching and learning. This finding has been also supported by Arthur-Nyarko and Kariuki (2019) in their study about learners access to resources for e-learning and preference for e-learning delivery mode in distance education programmes in Ghana. They reported that unreliable power supply due to lack of sustainable eletricity supply was a drawback to e-learning. In this study, participants reported that they felt that power blackout was part of life, and they could not run away from it. The participants' expression showed that they accepted the challenge, and were determined to work hard to complete the course work when they had electricity. In order to ensure effective online teaching and learning and continuous provision of quality nursing and midwifery services in Malawi, the government and training institutions should have an alternative power supply to circumvent power blackouts especially in hospitals. The alternative power supply could also help reduce the overreliance on the national Electricity Supply Corporation of Malawi (ESCOM) as source of power supply.

Furthermore, this study found that E-learning was a new teaching and learning approach for upgrading registered nurse midwife nursing education programme at diploma level. E-learning was underutilised especially in developing countries. The Corona virus disease pandemic forced the entire world to rely on it for education (Zalat, et al. 2021). However, e-learning upgrading nursing education programme at Ekwendeni college of health sciences started before COVID 19 pandemic. E-learning is a digital revolution and significant breakthrough in education (Abbad, 2021).This study found that the novelty of E-learning mode was linked to; lack of technical support to participants by lecturers, inability to upload electronic skills and update some installed course content in the application used during E-learning. This affected students' positive learning experience and skills acquisition. This finding has been supported by Ramos-Morcillo et al. (2020) study on experiences of nursing students during the abrupt change from face to face to e-learning education during the first month of confinement due to COVID 19 in Spain. They indicated that inability to learn skills and procedures online (everything that was practice related) was one of the challenges of e-learning that was faced by students. Despite of that, it is important to note that COVID 19 affected the proper preparation and adoption of e-learning in universities

and colleges including the uploading of electronic procedures and skills on the e-learning applications. Incongruent to these findings are the results of Malatji & Baloyi (2023) study. The scholars showed that adoption of online teaching and learning is feasible for courses which do not need a practicum component. This finding would only be feasible in the absence of a pandemic or crisis because each programme has its own duration and allocated time. Presence of the crisis sometimes could force universities and Colleges to adopt a teaching and learning mode that would not be feasible in ideal situation. For instance the COVID 19 pandemic resulted in closure of schools and sudden change from classroom (face- to-face) to online teaching and learning. However, in nursing, practice is vital. Therefore, in nursing education, E-learning is recommended to be used in both clinical and classroom teaching to complement learning (Gause, et al. 2022). E-learning courses help people achieve their educational objectives, and support on the job learning by providing diverse communication tools and flexible learning options (Abbad, 2021). It is therefore necessary, to ensure that the pedagogical content of the e-learning nursing programme in Malawi incorporates both clinical and theory course content. This can be attained by ensuring that the e-learning applications are also uploaded with electronic procedures and skills in order to complement learning and skill acquisition.

Furthermore, findings of this study revealed that E-learning mode was also new to lecturers as it was to students. The findings indicated that lecturers were not able to get organised, provide electronic procedures or skills to be uploaded in the offline AMREF application, and were unable to provide and ensure that the offline application had updated course content. This result agreed with Wallace et al. (2021) study findings on nursing student experiences of remote learning during the COVID 19 pandemic. They reported that lack of familiarity with the delivery of the online teaching pedagogies by faculty members was one of the barriers to online learning. However, findings reported by the scholars could have been due to the sudden transitioning to remote learning due to COVID 19 pandemic. Nevertheless, prior training and orientation of lecturers on e-learning applications to be used during the e-learning education programme is imperative. The knowledgeable and skilled lecturer would be able to monitor and evaluate whether the course content uploaded on the e-learning applications and system is complete and up to date. Findings of this study on lecturers' technical challenge are congruent with the results of the literature review on challenges of e-learning in medical sciences conducted by Naderifar, et al. (2017). Their findings showed that lecturers' inadequate knowledge and lack of expertise

on e-learning applications, platforms and its functioning affected students learning through the online approach. The present study findings are congruent with the study report of Callinan (2020) who indicated that delivery of quality E-learning materials is achieved when E-learning practitioners understand and define the learning content and ensure that all the required materials are uploaded on the applications. Contrary to the previous findings, this study indicated that inadequate preparation of lecturers and unavailability of electronic skills on the e-learning application affected students' positive learning experience and skills acquisition. These findings propose the need for continuous monitoring and evaluation of educational programmes in the training institutions in order to maintain nursing education standards.

In Malawi, the Nurses and Midwives Council of Malawi (NMCM) launched a mandatory continuing professional development (CPD) programme for all registered nurses and midwives in 2010. The NMCM linked the CPD programme to annual re-licensure (Chilomo, et al. 2014). To ensure access to continuous professional development education and information in low- and middle-income countries, World Continuing Education Alliance (WCEA) provides online competency and evidence-based training of health care professionals including nurses and midwives in Malawi. This ensures that nurses and midwives are acquainted with online learning, and are continually improving their skills which enable them to deliver better patient centered care to improve health outcomes irrespective of their location. We, therefore, recommend that the NMCM should capitalise on online acquisition of CPD points prior to annual re-licensure since WCEA provides online training irrespective of the location of the health facility and cadre of nurses to achieve the required CPD points. This would promote acquisition and utilisation of information and communication technology tools by all nurses in nursing and midwifery practice as well as nursing education.

5.5 Ways of improving learning through E-learning mode

Although the focus of this study was on experiences of Registered Nurse Midwives with E-learning mode, it also reveals important information on how E-learning can be improved. The study findings elucidate that quality education through E-learning mode in nursing and Midwifery profession can be attained once there is an improvement on the: instructional and application design, technology and E-centre infrastructure, support from academicians, ICT personnel and librarians, and allocation of more financial resources towards E-learning. The need for E-centres and allocation of more financial resources has been emphasised before by

Chawinga & Zozie (2016) who argued that online education requires E-centres that are equipped with technological resources like computers and internet. They also indicated that the allocation of financial resources to institutions should be based on its performance. In addition, study participants suggested that updating the course content and the installed application, installation of all course content including the electronic skills, would ensure that students practice the right skills. In the end, they would be prepared to be safe Nurse Midwife practitioners.

In this study, participants suggested the intensification of face to face and virtual sessions to enhance their understanding and hands on experiential learning. Al-Balas, et al. (2020) indicated that satisfaction in e-learning is strongly linked to students' prior experience in e-learning as well as instructor's experiences and interactions. The prior experience in face to face teaching and learning could have contributed to the above suggestion by participants. Similarly, prior research by Ramos-Morcillo et al. (2020) indicated that face-to-face teaching was preferred to E-learning during the COVID-19 pandemic. Findings of this study on availability of IT personnel at the E-centre are inconsistent with the result obtained by Al-Fraihat et al. (2020). They indicated that full time availability of the IT personnel at the E-centres does not contribute to the usefulness of e-learning system and the utilisation of the system. The study participants also indicated that investing more financial resources towards provision of scholarships, improving technological infrastructure, reliable power supply, efficient internet connectivity, downward revision of the rates charged on internet, and orientation to E-learning course prior to training could improve teaching and learning through E-learning mode.

5.6 Conclusion

The primary objective of this research was to explore the experiences of Registered Nurse Midwives with E-learning approach from Ekwendeni College of Health Sciences. The study reveals that there are online and offline platforms and applications that are used in e-learning upgrading nursing programme. Students' prior knowledge on operating the platforms and applications used in e-learning mode contributes to either challenging or good technical experiences. The study findings support the notion of introducing the ICT course in nursing education programme so as to ensure that all learners have knowledge and skills in operating the applications and platforms being used in their e-learning. The acquired technical expertise would also allow them to continue with their professional development using different applications and platforms in order to provide quality evidence based nursing care. The study findings are an

indicator of the fact that completion of e-learning upgrading nursing programmes requires learners' motivation and commitment, self discipline and availability of support systems irrespective of the encountered challenges. The findings show that poor internet connectivity, power blackout, lack of technological infrastructure and time constraints are some of the challenges that would affect the advancement of e-learning nursing education programme in Malawi. The results signify the importance of collaborative efforts in addressing the challenges of e-learning nursing education and facilitate effective learning through e-learning mode. Collaborative efforts from the government, regulatory body, ESCOM and training institutions are paramount in ensuring effective online nursing education in Malawi.

5.7 Recommendations

Based on the findings of the study, the researcher makes the following recommendations on E-learning in Nursing and Midwifery profession.

5.7.1 Recommendations for Nursing Education

Considering the current critical shortage of human resource for health including nurses and midwives in Malawi's health facilities, E-learning upgrading programme is the ideal and cost effective programme for human resource training and development. Therefore, the nursing and midwifery regulatory body (Nurses and Midwives Council of Malawi) should encourage the introduction and approval of E-learning upgrading curriculums. The regulatory body should provide guidance and support to the training institutions that are interested in the provision of the E-learning upgrading programme. Since E-learning would facilitate the attainment of one of the objectives of the Health Sector Strategic Plan III (2022-2030): improve availability, retention, performance and motivation of human resources for health for effective, efficient and equitable health service delivery (Government of the Republic of Malawi, 2022).

The regulatory body should also reinforce attainment of nursing education standards by training institutions through monitoring and evaluation on implementation of the curriculum and accreditation of E-learning programs. This will help to ensure that quality nursing education is provided by training institutions all the time.

Basing on the challenge of E-learning instructional design and it being a new phenomenon, the researcher recommends that management in training institutions should ensure that all the required resources are available for students, faculty members and ICT personnel in order to ensure the provision of quality nursing education through E-learning mode. Furthermore, training institutions should ensure good collaboration between academicians, ICT personnel, administrators and E-learning system designers in order to promote the efficiency and efficacy of the E-learning system. The academicians should ensure that all course content, including the E-skills, is updated and uploaded on the E-learning systems applications.

5.7.2 Areas for further research

The present study has covered important issues that cannot be explored within the scope of this study. This study explored the experiences with E-learning mode from Registered Nurse Midwives' perspective. There is need to extend the study to explore the experiences of teaching using E-learning mode from the lecturers' view in order to understand the enablers and hindrances of learning through E-learning mode from their perspective. Lecturers' experiences can unveil factors from their perspective that participants might not have experienced. The collected information from lecturers would facilitate in identification of interventions that could promote or derail E-learning in nursing education once implemented.

References

Abbad, M. M. M. (2021). Using the UTAUT model to understand students' usage of e learning systems in developing countries. *Education and Information Technologies*, 26, 7205–722. **https://doi.org/10.1007/s10639-021-10573-5**

Ahmat, A., Okoroafor, S. C. Kazanga, I. Asamani, J. A., Millogo, J. J. S., Illou. M. M. A., Mwinga, K. & Nyoni, J. (2022). The health workforce status in the WHO African Region: findings of a cross-sectional study. *BMJ Glob Health* 2022;7:e008317. doi:10.1136/bmjgh-2021-008317

Al-Balas, M., Al-Balas, H. I., Jaber, H. M., Obeidat, K., Al-Balas, H., Aborajooh, E. A., Al-Taher, R. & Al-Balas, B. (2020). Distance learning in clinical medical education Amid COVID-19 pandemic in Jordan: current situation, challenges and Perspectives. *BMC Medical Education*, 20, 341. https://doi.org/10.1186/s12909 020 02257-4

Alfaleh, R., East, L., Smith, Z. & Wang, S. Y. (2023). Nurses' perspectives, attitudes and experiences related to e-learning: A systematic review. *Nurse Educ Today,*125:105800. https://doi.org/10.1016/j.nedt.2023.105800

Al-Fraihat, D., Joy, M., Masa'deh, R. & Sinclair, J. (2020). Evaluating E-learningSystems Success: An Empirical Study. *Computers in Human Behavior*, 102, 67-86. https://doiorg/10.1016/j.chb.2019.08.004

Ali, W. G. M. (2016). Nursing student's readiness for e-learning experiences. *Gynecol Obstet (Sunnyvale)*, 6, 388. https://doi.org /10.4172/2161-0932.100038

Alsoufi, A., Alsuyihili, A., Msherghi, A., Elhadi, A., Atiyah, H., Ashini, A., Ashwieb, A., Ghula, M., Hasan, H. B., Abudabuos, S., Alameen, H., Abokhdhir, T., Anaiba, M., Nagib, T., Shuwayyah, A., Benothman, R., Arrefae, G., Alkhwayildi, A., Alhadi, A., Zaid, A. & Elhadi, M., (2020). Impact of the COVID-19 pandemic on medical education: Medical students' knowledge, attitudes, and practices regarding electronic learning. *PLoS ONE* 15(11), e0242905. https://doi.org/10.1371/journal. pone.0242905

Arthur-Nyarko, E. & Kariuki, M. G. (2019). Learners access to resources for e-learning and preference for elearning delivery mode in distance education programmes in Ghana. *International journal of educational technology*, 6 (2), 1-8. http://educationaltechnology.net/ijet/

Atout, M., Alrimawi, I., Dreidi, M., Jaghama, M. K., Khader, I. A. & Devadas, B. (2022). Online learning in nursing education: a qualitative study in occupied Palestinian territory. *The Lancet,* 399, S30. DOI:10.1016/S0140-6736(22)01165-5.

Bai, X., He, Y. & Kohlbacher, F. (2020). Older people's adoption of e-learning services A qualitative study of facilitators and barriers. *Gerontology & Geriatrics Education,* 41 (3), 291-307. DOI: 10.1080/02701960.2018.1469488

Barrot, J. S., · Ianares I. Llenares I. T. & Rosario, L. S. (2021). Students' online learning challenges during the pandemic and how they cope with them: The case of the Philippines. *Education and Information Technologies,* 26,7321–7338. https://doi.org/10.1007/s10639-021-10589-x

Basak, S. K., Wotto, M. & Belanger, P. (2018). E-learning, M-learning and D-learning: Conceptual definition and comparative analysis. *E-learning and digital media*, 15 (4), 191-216. DOI: 10.1177/2042753018785180

Billings, L., Allen, P., Armstrong M. & Green, A. (2012). Creating and launching innovative nursing education programms: Perils and Pearls. *Nursing education Perspectives*, 33 (5), 292-296.

Birt, L., Scott, S., Cavers, D., Campbell, C. & Walter, F. (2016).Member checking: A tool to enhance trustworthiness or merely a nod to validation. *Qualitative Health Research*, 26 (13), 1802-1811. DOI:10.1177/1049732316654870qhr.sagepub.com

Bower, M. (2019). Technology-mediated learning theory. *British journal of educational technology,* 50 (3), 1035-1048. doi 10.1111./bjet.12771.

Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qual Res Psychol:* 3 (7):77-101. http://www.tandfonline.com/doi/abs/10.1191/1478088706qp063oa

Broadbent, J. (2017). Comparing online and blended learner's self-regulated learning strategies and academic performance. *Internet and Higher Education*, 33, 24-32. *https://doi.org/10.1016/j.iheduc.2017.01.004*

Busetto, L., Wick, W. & Gumbinger, C. (2020). How to use and assess qualitative research methods. *Neurol.Res. Pract.*, 2, 14. https://doi.org/10.1186/s42466-02000059-z

Bvumbwe, T. & Mtshali, N. G. (2018). Transforming Nursing Education to Strengthen Health System in Malawi: An Exploratory Study. *Open Nurs J.* 12(1):93–105.

https://opennursingjournal.com/volume/12/page/93/fulltext/

Callinan, J. (2020). Barriers and facilitators to e-learning in Palliative care. *International Journal of palliative Nursing*, 26 (8). https://doi.org/158.232.240.071

Caulfield, J. (2019). *How to do thematic analysis step by step guide and examples* https://www.scribbr.com/methodology/thematicanalysis

Chawinga, W. & Zozie, P. (2016). Increasing Access to higher Education through Open and Distance Learning: Empirical findings from Mzuzu University, Malawi. *International Review of Research in Open and Distributed Learning*, 17(4), 1–20. https://doi.org/10.19173/irrodl.v17i4.2409\

Chilomo, C., Mondiwa, M. & Wasili, R. (2014). Strengthening professional development in Malawi. *African journal of Midwifery and Women's Health.* doi:10.12968/ajmw.2014.8.1.10

Creswell, J. W. & Creswell, J. D. (2017). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (5th ed.)*. SAGE Publications, Inc.

D'Antonio, P. & Clark, J. (2022). The history of Education in Nursing: the time is now. *Nursing education perspective,*43 (6), 385-386. doi: 10.1097/01.NEP.0000000000001059

Deakin University, (2021). *Qualitative study design*. https://deakin.libguides.com/qualitative-study-designs

Delone,W. H. & McLean, E. R. (2003). The DeLone and McLean Model of Information Systems Success: A ten-year update. *Journal of Management Information Systems*, 19 (4), 930. https: //www. tandfonline. com/ doi/ abs/ 10. 1080 /07 42 1222.2003.11045748

Dhir, S.K., Verma, D., Batta, M. *et al.* (2019). E-learning in medical education in India. *Indian Pediatr* 54, 871–877 . https://doi.org/10.1007/s13312-017-1152-9

Ebner, M., Braun, C., Schon, S. & Ebner, M. (2020). COVID-19 epidemic as e-learning boost? Chronological development and effects at an Australian University against the background of the concept of E-learning readiness. *Future Internet*, 12(94). doi:10.3390/fi12060094

Feldacker, C., Jacob, S., Chung, M.H., Nartker, A. & Kim, H. N. (2017). Experiences and perceptions of online continuing professional development among Clinicians in Sub-Saharan Africa. *Human resource for health journal*, 15 (1), 1-8.

https://login.research4life.org/tacsgr1doi_org/10.1186/s12960-017-0266-4

Fresen, J. W. (n.d). Factors influencing Lecturer uptake of e-learning. *Teaching English with technology –special issue on LAMS and learning design*, 11 (1), 81-97.

Gachanja, F., Mwangi, N. & Gicheru, W. (2021). E-learning in Medical Education during COVID 19 pandemic: Experiences of research course at Kenya Medical training College. *BMC Medical Education*, 21(1), 1-8. DOI:https://login.research4life.org/tacsgr1doi_org/10.1186/s12909-021-03050-7

Gallegos, C., Gehrke, P. & Nakashima, H. (2018). Can mobile devices be used as an active learning strategy? Student perceptions of mobile device use in a nursing course. *Nurse Educator*, 44(5) ,270-274. doi: 10.1097/NNE.0000000000000613

Gama, L. C., Chipeta, G. T. & Chawinga, W. D. (2022). Electronic learning benefits and challenges in Malawi's higher education: A literature review. *Education and information technologies.* https://doi.org/10.1007/s10639-022-11060-1

Gause, G., Mokgaola, I. O. & Rakhudu, M. A. (2022). *Technology usage for teaching and learning in nursing education: An integrative review*.doi: 10.4102/curationis.v45i1.2261

Government of the republic of Malawi, (2022). *Malawi health sector strategic plan III 2022-2030. Reforming for Universal Health Coverage*. Government of Malawi.

Groenewald, T. (2004). A Phenomenological research design illustrated. *International journal of qualitative methods*. https://doi.org/10.1177/160940690400300104

Gruendemann, B. J. (2011). Nursing students experiences with face to face learning. *Journal of Nursing Education*, 50(12), 676-80. DOI: 10.3928/01484834-20110930 02

Henry, P. (2015). Rigor in Qualitative research: Promoting quality in Social Science Research. *Res J Recent Sci*, 4 (IVC-2015):25–8. www.researchgate.net

Hu, Y., Yong, J. Q.Y., Chng, M., C. C., Li, Z. & Goh, Y. S. (2022). Exploring Undergraduate nursing students' experiences towards home based learning as pedagogy during the COVID-19 pandemic: a descriptive qualitative exploration. *BMC Nursing*, 21, (13).https://doi.org/10.1186/s12912-021-00788-9

Hubackova, S. (2015). History and Perspectives of E-learning. *Procedia - Social and Behavioral Sciences.* 191, 1187 – 1190. https://www.researchgate.net

Ibrahim, N. K., AlRaddad, R., Aldarmas, M., AlGhamdi, A., Gaddoury, M., AlBar, H. M. & Ramadan, I. K. (2021). Medical student' acceptance and perceptions of e-learning during the COVID-19 closure time in King Abdulaziz University, Jeddah. *Journal of infection and Public health,* 14 (1), 17-23. https://login.research4life.org/tacsgr1doaj_org/article/522fe0bd2b334de4bc775ee52e0b75d9

Kaushal, N. (2020). *E-learning: meaning, importance, principles and relevance in higher education*. www.Ikouniv.ac.in

Kiger, M. E & Varpio, L. (2020). Thematic analysis of qualitative data: AMEE Guide No. 131. *Med Teach,* 42 (8), 846-854. doi: 10.1080/0142159X.2020.1755030.Epub 2020 May1.PMID:32356468

Kentnor, H. (2015). Distance Education and the Evolution of Online Learning in the United states. *Curriculum and Teaching dialogue*, 17(1-2), 4-18.digitalcommons.du.edu

Khaldi, A., Bouzidi, R. & Nader, F. (2023). Gamification of e-learning in higher education: a Systematic literature review. *Smart learning environments*, 10(1), 1 31.DOI:https://login.research4life.org/tacsgr1doi_org/10.1186/s40561-023-00227-z

Klawitter, A. (2022). *5 challenges students face with online learning in 2022*. meratas.com

Kotoua, S., Iikan, M. & Kilic, H. (2015). The Growing Of Online Education in Sub Saharan Africa: Case study Ghana. *Procedia-social and behaviour sciences*, 191, 2406-2411.www.sciencedirect.com

Langegard, U., Kiani, K. Nielsen, S. J. & Svensson, P. A. (2021). Nursing students' experiences of a pedagogical transition from campus learning to distance learning using digital tools.*BMC Nursing,* 20, 23. https://doi.org/10.1186/s12912-021

Lawless, C. (2018). What is e-learning? https://www. learnupon.com

Lawn, S., Zhi, X. & Morello, A. (2017). An interactive review of e-learning in the delivery of self management support training for health professionals. *BMC Medical education,* 17, 183. DOI 10.1186/S12909-017-1022-0

Mahmoud, D. M., Tantaewy, N. M. & Allam, H. M. (2020). E-learning; Barriers and opportunities; Nursing students perspectives. *Egyptian Journal of Health Care,* 11, 4. https://ejhc.journals.ekb.eg/article_228551_c1b95a950bf27e13a6bbcc6e0ebd8d5d.pdf

Malawi Ministry of Health, (2022). *Government of the Republic of Malawi Health Sector strategic plan III (2023-2030). Reforming for Universal Health Coverage (1st ed.).* Ministry of Health.

Malawi National planning Commission (2020). *Malawi's Vision. An Inclusively Wealthy and Self-reliant Nation. Malawi 2063*. National Planning Commission

Malatji, E. J. & Baloyi, N. C. (2023). *Analysis of Ramifications of power outages on online teaching and learning in South Africa*. DOI:10.33422/9th.hsconf.2023.07.130

Manti, A. & Licari, S. (2018). How to obtain informed consent for research. *Breath (sheff),* 14 (2), 145-152. doi: 10.1183/20734735.001918

Marcial, D. E. (2018). Facilitating and hindering factors of technology-assisted teaching and learning: Evidence from a developing country. *Institute for digitalization of Education of the NAES of Ukraine*, 68 (6), 125-139. http://journal.iitta.gov.ua

Masache, G. (2016). *Implementation of E-learning in Nursing Education in Malawi: The Case of Kamuzu College of Nursing-University of Malawi*. http://oasis.col.org

Mastellos, N., Tran, T., Dharmayat, K., Cecil, E., Lee, H., Pengwong, C. C., Mkandawire, W., Ngalande, E., Tsung-Shuwu, J., Hardy, V., Chirambo, B. G. & O'Donoghuel, J. M. (2018). Training Community Healthcare Workers on the use of Information And Communication Technologies: randomised controlled trial of traditional versus blended learning in Malawi, Africa. *BMC Medical Education,* 18 (61), https://doi.org/10.1186/s12909-018-1175-5

Naderifar, M., Jalalodin, A. & Tehghaljaie, F, (2017). Challenges of E-learning in Medical sciences: A review article. *Journal of medical education development*, 9 (23), 102-112.https://login.research4life.org/tacsgr1doaj_org/article/c1b2911fe6d145e2b28c98f1f720a3

Neubauer, B. E., Witkop, C. T. & Varpio, L. (2019). How Phenomenology can help us Learn from the experiences of others. *Perspect Med Educ* 8:90-97. DOI https://doi.org/10.1007/s40037-0190509-2

Ngampornchai, A. & Adams, J. (2016). Students' acceptance and readiness for E-learning in Northeastern Thailand. Int J Educ Technol High Educ, 13 (34). https://doi.org/10.1186/s41239-016-0034-x

Niwaz, A., Ahmed, Q. W. & Kamran, S. (2019). An exploration of issues and challenges faced by students in distance learning environment. *Global Social Sciences Review,*

IV (IV), 77 -83. DOI:10.31703/gssr.2019(IV-IV).11

Nkamwesiga, L. (2017). Framework for E-learning in high institutions of learning in developing Countries: A systematic review of literature. *International journal of Science and Research (IJSR) ISNN (Online),2319-7064.* DOI:10.21275/ART20178931

Nurses and Midwives Council of Malawi (2016). *Nurses and Midwives Council of Malawi:Standards, 30361*. http://www.nmcm.org.mw/downloads.html

Polit, D. F. & Beck, C. T. (2018). *Essentials of nursing research. Appraising evidence for Nursing practice (9th ed.*). Wolters Kluwer Health

Ramos-Morcillo, A. J., Leal-Costa, C., Moral-Garcia, J. E. & Ruzafa-Martinez, M. (2020)**.** Experiences of Nursing students during the abrupt change from face to face to e-learning education during the first month of confinement due to Covid-19 in Spain. *International journal of environmental research and public Health,* 17, 5519. doi:10.3390/ijerph17155519

Regmi, K. & Jones, L. (2020). A systematic review of the factors-enablers and barriers affecting e- learning in health sciences education. *BMC Med Educ,* 20 (19). https://doi.org/10.1186/s12909-020-02007-6

Roslan, N. S. & Halim, A. S. (2021).*Enablers and barriers to online learning among Medical students during COVID-19 pandemic. An explanatory mixed method study*. DOI:https://login.research4life.org/tacsgr1doi org/10.3390/su13116086

Sahafi, A. A. & Moaiad, Y. A. (2022). The influence of inadequate computer skills on e-learning in high schools. *International Journal of Novel Research in Interdisciplinary Studies:* 9 (6):10 – 4. DOI:https://doi.org/10.5281/zenodo.7488848

Sarna, K., Gwala, F.,Amuti, T., Olabu, B., Obimbo, M., Ogeng'o, J., Kabere, G. & Muthuuri, N. (2022). Perception and challenges of Health Science Students toward E-learning in a Sub- Saharan African Country: A multi-institutional study. *The Annals of African Surgery,* 19 (1): 16-22. DOI::https/login.research4life.org/tacsgr1doi org/10.4314/aas.v19i1.4

Serevina, V. Ekayanti, A. N. & Aliftika, O. (2022). Development of online learning devices based on project based learning in optical materials. *J. Phys: conf. ser*, 23090-12059. doi:10.1088/1742-6596/2309/1/012059

Smith, Y., Chen, Y. J. & Warner-Stidham, A. (2021). Understanding online teaching effectiveness: Nursing student and faculty perspective. *Journal of professional Nursing,* 37 (5). https://doi.org/10.1016/j.profnurs.2021

Stankovic, A., Petrovic, B. & Milosevic, Z. (2015). Attitudes and Knowledge of Medical Students about Distance Learning. *Acta Facultatis Medicae Naissensis,* 32(3)199 207. DOI: 10.1515/afmnai-2015-0020

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

Tufford, L. & Newman, P. (2012). Bracketing in qualitative research. *Qualitative social work Research and practice*, 11 (1), 80-96. https://doi.org/10.1177/1473325010368316

Urbach, N. & Muller, B. (2011). The Updated DeLone and McLean Model of information Systems Success**.** *Information Systems Theory,* 1-18. DOI:10.1007/978-1-4419 6108-2_1

Wallace, S., Schuler, M. S., Kaulback, M., Hunt, K. & Baker, M. (2021). Nursing student experiences of remote learning during the COVID-19 pandemic. *Nursing forum an independent voice for Nursing-WILEY*. DOI:10.1111/nuf.12568

Willig, C. (2008). Introducing qualitative research in psychology. Adventures in theory and method (2nd ed.). Mc Graw Hill.

Yangoz, T. S., Okten, C. & Ozer, Z. (2017). The use of e-learning program in nursing education. *New Trends and Issues Proceedings on Humanities and Social Sciences,* 4(2), 230-236. www.prosoc.eu

Yuksel, P. & Yildirim, S. (2015). Theoretical frameworks, methods and procedures for conducting phenomenological studies in education settings. *Turkish online journal of qualitative inquiry*, 6 (1). https://dergipark.org.tr/tr/download/article-file/199867

Zalat, M. M., Hamed, M. S., Bolbol, S. A. (2021). The experiences, challenges and acceptance of e-learning as a tool for teaching during the COVID-19 pandemic among university

medical staff. *PLoS ONE* 16(3), e0248758. https://doi.org/10.1371/journal.pone.0248758

Appendix A: MZUNIREC Research approval letter

MZUZU UNIVERSITY

DIRECTORATE OF RESEARCH

Mzuzu University
Private Bag 201
Luwinga
Mzuzu 2
MALAWI
TEL: 01 320 722
FAX: 01 320 648

MZUZU UNIVERSITY RESEARCH ETHICS COMMITTEE (MZUNIREC)

Ref No: MZUNIREC/DOR/23/30 **27/03/2023.**

Cecilia Simpokolwe,
Mzuzu University,
P/Bag 201,
Luwinga,
Mzuzu 2.

Dear Cecilia,

RESEARCH ETHICS AND REGULATORY APPROVAL AND PERMIT FOR PROTOCOL REF NO: MZUNIREC/DOR/23/30: EXPERIENCE OF REGISTERED NURSE MIDWIVES WITH E-LEARNING MODE FROM EKWENDENI COLLEGE OF HEALTH SCIENCES.

Having satisfied all the relevant ethical and regulatory requirements, I am pleased to inform you that the above referred research protocol has officially been approved. You are now permitted to proceed with its implementation. Should there be any amendments to the approved protocol in the course of implementing it, you shall be required to seek approval of such amendments before implementation of the same.

This approval is valid for one year from the date of issuance of this approval. If the study goes beyond one year, an annual approval for continuation shall be required to be sought from the Mzuzu University Research Ethics Committee (MZUNIREC) in a format that is available at the Secretariat. Once the study is finalised, you are required to furnish the Committee with a final report of the study. The Committee reserves the right to carry out compliance inspection of this approved protocol at any time as may be deemed by it. As such, you are expected to properly maintain all study documents including consent forms.

Wishing you a successful implementation of your study.

Committee Address:
Secretariat, Mzuzu University Research Ethics Committee, P/Bag 201, Luwinga, Mzuzu 2; E-mail address: mzunirec@mzuni.ac.mw

Yours Sincerely,

Gift Mbwele

SENIOR RESEARCH ETHICS ADMINISTRATOR

For: CHAIRMAN OF MZUNIREC

Committee Address:
Secretariat, Mzuzu University Research Ethics Committee, P/Bag 201, Luwinga, Mzuzu 2; E-mail address: mzunirec@mzuni.ac.mw

Appendix B: Informed consent

Mzuzu University Research Ethics Committee (MZUNIREC)

Informed consent form for Research in

Experiences of Registered nurse Midwives with e-learning approach from Ekwendeni College of Health Sciences

Introduction

I am Ceciliah Simpokolwe from Mzuzu University pursuing a Master of Science in Nursing Education (Clinical Teaching). We are doing a research on experiences of Registered Nurse Midwives with e-learning approach from Ekwendeni College of Health Sciences. This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you can ask them of me or of another researcher.

Purpose of the research

The research aims to explore the experiences of Registered nurse Midwives with e-learning approach from Ekwendeni College of Health Sciences.

Type of research intervention

This research will involve your participation in individual interview

Participant selection

You are being invited to take part in this research because you are one of the Registered nurse Midwives who completed the upgrading e-learning programme from Ekwendeni College of Health Sciences.

Voluntary participation

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. If you choose not to participate nothing will change. You may skip any question and move on to the next question

Duration

The research interview will take place for an average time of 30 to 50 minutes.

Risks

You do not have to answer any question or take part in the interview if you feel the question (s) are too personal or if talking about them makes you uncomfortable

Reimbursements

You will not be provided any incentive to take part in the research

Sharing the results

The knowledge that we get from this research will be shared with you and your community before it is made widely available to the public. Following, we will publish the results so other interested people may learn from the research.

Who to contact

If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact: Mr Gift Mbwele, Mzuzu University Research Ethics Committee (MZUNIREC), Mzuzu University, P/ Bag 201 Luwinga Mzuzu. Phone: 0999404008/0888641486.

The proposal for this study has been reviewed and approved by Mzuzu University Research and Ethics Committee which is a committee whose task is to make sure that research participants are

protected from harm. If you wish to find more about the committee, contact Mr Gift Mbwele, Mzuzu University Research Ethics Committee (MZUNIREC), Mzuzu University, P/ Bag 201 Luwinga Mzuzu. Phone: 0999404008/0888641486.

Do you have any questions?

Part II: Certificate of consent

I have been invited to participate in research about experiences of Registered Nurse Midwives with e-learning approach from Ekwendeni College of Health Sciences.

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study.

Print Name of Participant_____

Signature of participant_____

Date_____

Day/ month/ year

Statement by the researcher/ person taking consent

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands the research project. I confirm the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

Signature of the Researcher/ person taking the consent_____

Date_____

Day/ month/ year

Appendix C: Data collection tool

Date of interview ……

Participant ID ……

PART I: DEMOGRAPHIC DATA

1. Gender : M F
2. Age Range : 18 – 25 , 26 – 33, 34 – 41, 42 – 49, 50 – 57 , Above 57
3. Marital status : Unmarried, Married, Divorced, Widow, Widower
4. Health facility: Urban Health Centre, Rural Health Centre, Mission Hospital, District Hospital, Central Hospital, Private Hospital
5. Do you have any additional responsibility at the facility: Yes No
6. If Yes specify ……..

PART II: SYSTEMS AND SERVICE QUALITY

A. PLATFORMS AND APPLICATIONS USED IN E-LEARNING MODE

1. What platforms and applications did you use during your e-learning upgrading programme?
2. How was your experience with e- learning platforms and applications?

B: INFORMATION QUALITY

3. What factors facilitated your learning using the e-learning approach?
4. What factors affected your learning using the e-learning mode?
5. How can e-learning mode be improved?

THANK YOU FOR YOUR PARTICIPATION

Appendix D: Transcription (in-depth interviews)
Experiences of Registered Nurse Midwives with e-learning mode from Ekwendeni College of Health Sciences

		Participant code: Participant # P1-M-3-04 **Age range**: 26-33 **Sex**: Male **Marital status**: Married **Type of health facility**: District Hospital **Additional responsibility**: Deputy incharge HDU & Coordinator of Palliative care Programme
	CODES	
		PLATFORMS AND APPLICATIONS USED
	Offline platform/ application loaded with study content. internet	**I**. What platforms and applications did you use during your e-learning upgrading programme? **P**. *I have been using an offline platform. It was an AMREF application loaded with study content. We were also using the general internet.*
	Good experience References available and accessed either online or offline	**I**. How was your experience with e-learning platforms and applications? **P.** *The experience was good. Each topic had references. Some of the referenced books were accessed offline while some books were accessed online.*

		INFORMATION QUALITY
	Personal desire to learn Lecturers / Facilitators support and availability Support from AMREF'S and College's ICT personnel and fellow students from Malawi College of Health Sciences Sketchy and outdated information Some content missing on the uploaded application Costs for internet to access online content and information It required a gadget to	**I.** What factors facilitated your learning using the e-learning approach? **P.** *There are a number of factors. One, it was a personal desire to learn; yes that is inner thing or motivation. Sometimes I used to explore on the laptop by myself. The other factor is the facilitators or the Lecturers who assisted us to get into the e-learning platform. They were always available and ready to assist us; both physically and online. We were also assisted by an expert in ICT from AMREF, the Lecturer in ICT from the College and fellow students from Malawi College of Health Sciences who were also doing the e-learning upgrading programme.* **I.** What factors affected your learning using the e-learning approach? P. *As I said earlier on, the information was somehow outdated. It was sketchy as it had little information that was also outdated. Examples of topics that had outdated information are: management of eclampsia and classification of pneumonia. The other drawback was that some content for some topics was not uploaded on the application. You see a certain module is missing but looking at the course outline it required you to learn that module. If the module is not accessed offline then it meant going online to access the content using internet. It became expensive since we were being charged for the internet. The other challenge is that the programme required one to have a gadget, especially the laptop. When that gadget is*

	access information and when lost it meant losing all information. Limited flexibility on installation of AMREF application in the computer Offline platform installed in computers only; not able to install in smart phone e-learning applications to contain up to date information. User friendly application that can be downloaded and installed by everyone Offline access to uploaded course content to minimise internet charges Installation and accessibility of the offline platform in smart phones. e-learning centers to have	*lost or has a fault, you also lose some of the information and you needed an expert in ICT to install that application to your new gadget. We were not oriented. At first, we were told to bring the gadget so that the ICT man should install for us. So he installed. So whenever you are stuck you needed to consult the ICT man to install for you. So we were not empowered to install on our own. Lastly, the offline platform was installed only on computers and not other gadgets like smart phones* **I.** How can e-learning mode be improved? **P.** *Firstly, applications need to be updated now and then so that it contains up to date information. In addition, the application should be user friendly in terms of installation. Everyone should be able to install it or if it means downloading then everyone should be able to download it. That can be easy. Furthermore, the uploaded course content should be accessed offline once downloaded; one should be able to refer to it or use it for a quite period of time. This will minimise internet charges. The other thing to improve on is installation and accessibility of the offline platform on smart phones. In times of blackout, the phone is a bit durable in terms of the power. The battery of a phone as compared to laptop can take you up to 12 hours or more. So when one is studying on a phone during black out can do it for 12 hours. Lastly, the e-learning centers should have power back up like generator so that there should be no power interruption during the process of studying. In addition, the centers should have reliable internet connectivity or wifi.*

	power back up and reliable internet connectivity or wifi.	

TRANSCRIPTION (INDEPTH INTERVIEWS)

Experiences of Registered Nurse Midwives with e-learning mode from Ekwendeni College of Health Sciences

		Participant code: Participant # P2-M-10-04 **Age range**: 34-41 **Sex**: Male **Marital status**: Married **Type of health facility**: District Hospital **Additional responsibility**: *Clinical Mentor, Preceptor, Helping Babies Breathe Coordinator and Labour ward Quality Improvement Chairperson.*
	CODES	
		PLAFTORMS AND APPLICATIONS USED
	Email, WhatsApp, internet	**I.** What platforms and applications did you use during your e-learning upgrading programme? **P.** *During our e- learning programme we used email, WhatsApp and internet. We also had a one to two weeks period of face to face. Amongst the mentioned platform, we were mostly using email.*

	At first could face some challenges with internet Late submission of assignment by those not conversant with platforms After practice were able to submit assignment on time.	**I**. How was your experience with e-learning platforms and applications? P. *At first we could face some challenges with some of the platforms more especially when it came to issues to do with internet. We could use internet more often when searching for information and submitting assignment. Those who were not conversant with the application were unable to submit assignments on time. But, all in all, after sometime of practicing on how to search and send information, we developed some skills on how to use those platforms. We were able to do our assignments and submit them on time.*
		INFORMATION QUALITY
	Commitment by College management and Lecturers Support from AMREF: gadgets like tablet, mifi routers and desktop in e-learning satellite centers. Support from clinical mentors and resident Tutor in clinical area.	**I.** What factors facilitated your learning using the e-learning approach? **P.** *There were a number of factors. Some of the factors like institution's commitment starting from the Principal, the Deputy Principal and Lecturers were committed on delivering course content to students. But also the coming of AMREF to support us with some gadgets like tablet, mifi routers for internet and computers which were placed and used in designated satellite centers. For example, in Karonga, we were privileged to have one satellite center for e-learning at the District Hospital. In addition, in our satellite centers they were some Clinical Mentors who were trained by the College so that they should be supervising us during our clinical placement. Furthermore, here in Karonga we were privileged to have a resident Tutor who was residing here and could assist us in so many areas that*

	Support from family managers and workmates Intermittent internet connectivity Pressure of work and inadequate time	*we had some challenges. With e-learning approach, most of the school work was being done by us during the working from home period. It took some initiative from the District Nursing and Midwifery Officer who requested the incharge to exempt us from doing other duties so that we could have enough time to do our school. Lastly, various supports we got from; home and our workmates facilitated our learning. I can say that our learning was facilitated by the support we got from all the stakeholders starting from the College, the District Hospital and AMREF our Sponsor.* **I.** What factors affected your learning using the e-learning approach? **P.** *Intermittent internet connectivity is one of the factors that affected our learning and timely submission of assignment. Apart from the internet issue, the other thing was to do with time: more especially when we are done with face to face and we came to our facilities. We had pressure of work in a sense that we were working on assignments and studying at the same time while carrying out our duties at work and looking at our families. With e-learning approach, most of the school work was being done by us during the working from home period. It took some initiative from the District Nursing and Midwifery Officer who requested the incharge to exempt us from doing other duties so that we could have enough time to do our school work. However, in some facilities our colleagues faced challenges to the extent that there were even denied to continue with their school just because they were told they will be removed from the payroll. This happened to those who were not included in the Health facilities' training plan. So their hospital management said they would not support them if they went*

	Lack of School fees Power black out Erratic internet connectivity Have Fully equipped e-learning centers with good internet connectivity and staffing to support learning. Improve on internet	*to school.* *The other challenge was fees itself. Had it been that AMREF didn't come in to support us with school fees, many of us could have dropped out the programme. It was a bit expensive though it was not a full time based programme. We were relieved in terms of paying the school fees with the coming in of AMREF. The other challenge is power black outs. Sometimes we could have power blackouts for two or more hours or whole day when we were doing our studies. Lastly, Poor internet connectivity affected timely submission of assignments. Sometimes when you needed to submit your assignment it is when you realized that the internet was down. So it was really a challenge to search for the information and submit our assignments on time.* **I.** How can e-learning mode be improved? **P.** *The best way to improve the e-learning mode is to improve in the e-learning satellite centers. For example, the way Mzuzu University has done by having a big satellite center close to Karonga TTC. It has got a library, computer lab with internet connectivity, personnel from the College who are based there to support student's learning.* In *our case we only had a satellite center with only computers and an offline module. It can be better if they can be improvement of satellite centers. Improvements can be done in terms of internet services and availability of either a Clinical Instructor or Tutors at the satellite centers to support students' learning and address the challenges that may arise.* *The other area to improve on is on submission of assignments to satellite centers and not the college. With the availability of personnel from College at the satellite center,*

	connectivity Ensure availability of support at the e-learning center With fully working satellite centers; assignments to be submitted at those centers then to the College, Availability of library and books at e-center for referencing. Satellite centers to have power backup e.g solar panels or generator for continuous power supply	*assignments should be delivered to those satellite centers unlike sending directly to the college. It can be a responsibility of somebody at that satellite center to be sending those assignments to the college because sometimes we could delay in submitting the assignments just because of the internet. Had it been we had a vibrant satellite center, we could not have faced some of the challenges. Availability of library at satellite center could also assist because we cannot depend on internet for information pertaining to assignments. We also have to search for information from the books to enrich the references. In terms of power back up, satellite centers should also have either solar panels or generator so that they should be in continuous supply of power during black outs.*

Experiences of Registered Nurse Midwives with e-learning mode from Ekwendeni College of Health Sciences

		Participant code: Participant # 1-F-17-04 **Age range**: 34-41 **Sex**: Female **Marital status**: Married **Type of health facility**: District Hospital **Additional responsibility**: None
	CODES	
		PLAFTORMS AND APPLICATIONS USED
	Tablet, laptop, internet and Google, personal mobile phones	**I**. What platforms and applications did you use during your e-learning upgrading programme? **P.** *The course content was installed in the tablet. We were also using laptop and internet when we want to Google some information especially when you have an assignment to work on. We were also using the personal mobile phones to access the information since we were given the password*
	Challenging because it was a new programme and first time to use those applications Very easy to access and send information and assignment	**I**. How was your experience with e-learning platforms and applications? P. *At first it was challenging because it was the new programme and first time to use those applications. But after orientation and practice on using those gadgets we gained some experiences and got used to it. It was very easy for us to access and send the assignments and other information when needed.*

		INFORMATION QUALITY
	Orientation during face to face time on use of applications like laptop, internet and desktops Working on assignments during the learning from home period made them to be much familiar and well conversant with the application and platforms Access to internet and desktop.	**I.** What factors facilitated your learning using the e-learning approach? **P.** *The way it was being implemented contributed to the success. The programme was designed in such a way that we had time for face to face and learning from home. We started with face to face learning at the College and we were oriented on how to use applications like laptop, internet and desktops to access information. So, after those sessions it became easier to operate a laptop, access and send information using the internet. During the period of learning from home we had assignments that we were working on. As we were working on assignments we became much familiar and well conversant with the application and platforms that we were using during our upgrading programme. These addressed the problem of inadequate knowledge and skill on computer and internet* *Our facility was one of the e-learning centers and I was accessing internet from there. I don't know if it is still working. I have not checked. The center also had desktops that I was using to type my assignment and download information from there.* **I.** What factors affected your learning using the e-learning approach? **P**. *Firstly, e-learning was a new programme and by then we were not familiar with the internet and*

	Not familiar/ inadequate knowledge on internet and laptop	*laptop. These things were new to us. It was like we are being introduced now! So it was very difficult for us to starting operating the computer and using internet there and then. I could go to the e-learning center and fail to Google the information for the assignment which we were given. I could come back without accessing any information. After a year of practice we had no problem since by then we were used to the application and internet.*
	Poor internet connectivity	*We were unable to download and access some information due to poor internet connectivity. When internet is not working we had to use our own gadget like phone to access the information*
	Power blackout	*Blackout and we could not run away from it. The alternative during blackout especially when we had assignments due for submission was going to business people who have generator. I could pay a fee to access their power so that I send an assignment*
	Orientation of students to platform and applications	**I.** How can e-learning mode be improved? **P.** *The first thing that should happen after selection is orientation of students to the platform and applications. Some of the selected students might be well conversant with laptop while others not. Orientation will give every student the ability and opportunity to access and send the required information in good time. Secondly, there is a need to have stable and sustainable internet connectivity. Thirdly, intensify the face to face learning because during that period a student is able to ask questions*

	Stable and sustainable internet connectivity Intensify face to face learning	*on areas not well understood while they are together with the teacher face to face.* *E-learning is a good programme since one can be learning while accomplishes other roles at home. As an adult learner we have families and with e-learning we are able to look after the family, work and learn at the same time. E-learning is a good programme and it should continue*

TRANSCRIPTION (INDEPTH INTERVIEWS)

Experiences of Registered Nurse Midwives with e-learning mode from Ekwendeni College of Health Sciences

		Participant code: Participant # 2-M-26-04 **Age range**: 34-41 **Sex**: Male **Marital status**: Married **Type of health facility**: Community Mission Hospital **Additional responsibility**: *Baby friendly Hospital initiative (BFHI) and Visual Inspection with Acetic Acid (VIA) Coordinator*
	CODES	
		PLATFORMS AND APPLICATIONS USED
	Laptops and the gadgets ; tablet phone and airtel dongle	**I**. What platforms and applications did you use during your e-learning upgrading programme? **P.** *Most of the times we used laptops and the gadgets ; tablet phone and airtel dongle which was*

		provided to us by the funder AMREF **I**. How was your experience with e-learning platforms and applications? **P.** *At first as we were starting the course, it was a challenge more especially on submitting the assignment and giving the feedback to the Lecturers using the gadgets and emails. As time goes we picked up and then it was ok. All in all we learnt a lot because in any process of learning we still have challenges.*
	Challenging *It was ok*	
		INFORMATION QUALITY
	Installation of electronic book in the gadgets Accessibility of library at the College Support from their health facilities Manager, Colleagues	**I.** What factors facilitated your learning using the e-learning approach? **P.** *There are a lot of factors. One was the provision of electronic book. The electronic book was installed in our gadgets by the ICT officer. It contained all the courses and topics which were supposed to be learnt for the whole programme. The other thing is accessibility of library at College during face to face period. We were allowed to use the library and the librarian supported us in spite of the programme being new at the College. We did not feel any resistance. We could borrow books and even use internet for free during the face to face period. The other factor is the support from our Health facilities. The District Nursing and Midwifery Officer (DNMO) for Karonga District Hospital was much supportive. She could assist when you are stuck or want to ask something. Peer*

	Support from fellow students	*to peer learning and support also assisted us to complete the course. Support from our fellow students from other Colleges also facilitated our learning.*
	Payment of school fees from small business and salary	*In terms of school fees, some of us we have small businesses that we are running and from the businesses we are able to get some little things. We are able to support the family and pay the school fees. We should thank God that from our facilities they did not remove us from the pay roll. So, from the little salary we were able to pay for school fees in installments and the College had also to understand us. Then the other thing is the AMREF the sponsor came in and supported us especially in areas that we had challenges financially. The Sponsor supported us I think in three ways: paying schools fees starting from second semester of first year to second semester of second year which is the fourth semester, providing tablet phone and internet mifi.*
	Maintenance on pay roll	
	College consideration on payment of school fees in installments	
	AMREF'S support	
		I. What factors affected your learning using the e-learning approach?
	Difficult course	**P.** *The course which we were going through was a bit difficult because we had short period of time at school and spent much of our time at work place. We were combining work, school and taking care of the family at the same time. Now! We had a lot of work to do because when it comes to exams they don't necessarily see that this topic was a self directed content or someone has understood it or*
	A lot of work to do	

	School fees payment	*not .The exams were coming and they could come! So, it was really a problem because of the nature of the programme which was little time at school for face to face and much of our time at home. But all in all we managed to pick up and almost all of us managed to pass exams.* *School fees payment was also a challenge because out of the little salary that we get we had to support the family, pay for transport and school fees, and find accommodation and food during the face to face period. School fee was one of the challenges that made some students to drop out. In our case we were 55 who started the programme then we dropped to 33 and then we dropped to 20. So we finished 20. So out of 55 a lot of students dropped out. However, some went to Mzuzu University due to introduction of 3 years upgrading bachelors programme. So the e-learning upgrading programme from Nurse Midwife Technician to Registered nurse Midwife was considered irrelevant. People said why should we do the bridging? There is this direct programme so a lot of students dropped out. Kkk you know I was the president of the class and I have data.*
	Intermittent internet connectivity and power blackout	*The challenge of internet connectivity and black out was too much especially on the e-learning center. Sometimes we could stay for three to four days without electricity and that affected the learning process. The other thing was that as students we were paying for internet through school fees but for the College now to pay for the internet it was a challenge. We were waiting for the Sponsors.*

	Double payment for internet accesibility Unavailability of electronic skills on the uploaded electronic course content Minimal learning during clinical practice at their health facility.	*When the sponsors pay the internet service providers that is when we were going to have internet access. So it was an intermittent way of doing things. Like some three four months you have internet and then some four three months no internet and during this time it means you have to buy your own. We raised that to the Coordinator of the programme at the College during the time we were at school but by then she also said that she had a challenge I think because issues of finances are very difficult.* *The other challenge is the unavailability of electronic -skills in the uploaded course content. We discovered this when we were in our clinical practice area. There were no videos, no pictures to learn skills from at least to learn from that skills from there.* *As upgrading students we don't learn much of skills in the clinical area especially at the work place. When we go back to our work place for clinical practice normally we work and not learn.* **I.** How can e-learning mode be improved? **P.** *E-learning is a very good programme and I would recommend it. And if it happens that Malawi adopts e-learning upgrading programme at Bachelor's degree level, I would be the first person to advocate for those Registered Nurses that have completed e-learning upgrading programme from NMT to RNM to be the pioneers. What I would suggest is that the e-learning upgrading programme has to be direct from NMT to*

	Internet cost effectiveness. Reduction of data prices by internet service providers Intensification of skills demonstration in the skills laboratory by Lecturers	*professional Nurse rather than upgrading to Registered Nurse Midwife. This bridging thing we should stop it. Yes this bridging thing does not necessarily value anything. The course content that we do is just the same content that even at the degree level are doing except may be research and other things. So, that is one of the things l think it should be improved. The other thing is Internet. I think as students, we need to be prepared. They should prepare us, to say in this programme you are going to buy your own data. It becomes expensive to pay school fees that have a composition of internet fee and buying internet bundles. It can be cost effective if students should be buying their own data without paying for internet fee.* *The other thing that has to be improved on is data costs. The data now is very expensive. I thank God the president is now lobbying for reduction of data prices with internet service providers. With reduced data prices l think e-learning will be very nice and cheap.* *Skills demonstration in the skills laboratory by Lecturers has to be intensified more especially for upgrading students. As students who always touch the patient we need to acquire and perfect our skills. Having skills demonstration in the skills laboratory with Lecturers is an easy way of learning a skill. I appreciated this when I assisted a client with shoulder dystocia. We were demonstrated on managing a baby whose shoulders cannot be delivered spontaneously (shoulder*

		dystocia) in skills laboratory and when I faced the client with this condition I had no problems in managing her. I managed exactly as it was done in the skills laboratory and I rescued this baby. The other example is on helping babies breathe (HBB). We learnt the skill in the skills laboratory and when we had a similar case at the ward we managed the baby the way we were taught by Lecturers in skills laboratory. As upgrading students we don't learn much of skills in the clinical area especially at the work place. When we go back to our work place for clinical practice normally we work and not learn. So for me, I feel like the time I have been at school in the skills lab I acquired more skills than the time I have been in the clinical practice. What we want is to make a difference after completing the programme. Learning is meaningless if someone is still referring clients after completing the upgrading programme from NMT to Registered nurse Midwife.

TRANSCRIPTION (INDEPTH INTERVIEWS)

Experiences of Registered Nurse Midwives with e-learning mode from Ekwendeni College of Health Sciences

		Participant code: Participant # 3-F-8-05 **Age range**: 34-41 **Sex**: Female **Marital status**: Married **Type of health facility**: Urban Health Center **Additional responsibility**: None
	CODES	
		PLATFORMS AND APPLICATIONS USED
	Loop, Firefox, smart phone, tablet phone, airtel mifi	**I**. What platforms and applications did you use during your e-learning upgrading programme? **P.** *We used mainly loop and firefox, Laptop, smart phone and a portable tablet phone. But as the programme was going towards the end AMREF sponsored us with another portable gadget for us to access internet. It was airtel mifi.*
	Nice experience Sometimes could not search and access information due to poor internet connectivity	**I**. How was your experience with e-learning platforms and applications? **P.** *It was a nice experience though there was a need to search for more information on the internet. With the poor internet connectivity sometimes we could not search and access the information. But as the programme was going towards the end AMREF sponsored us with airtel mifi for us to access internet. It really helped us a lot especially when*

	Did well in final and licensure examination	*we were preparing our final as well as the licensure examination. So we did well just because of that since we could easily access the information on loop or Google.*
		INFORMATION QUALITY
		I. What factors facilitated your learning using the e-learning approach?
	Friendly Lecturers	**P.** *Firstly, our Lecturers were friendly. Had it been they were harsh I could have dropped out of the programme. The second factor is support that AMREF the sponsor gave us especially tuition, some gadgets and upkeep allowance. The support relieved the stress of searching for money for school fees and it helped us to somehow concentrate on our studies. The other factor is support from other institutions that we are surrounded by. I talked of St John's institute for Health where I was going to access free wifi. The people there were also friendly. Had it been to say there were charging the internet service I would not afford and the programme would have been very difficult for me.*
	AMREF sponsorship	
	Support from St John's institute for Health	
	Friendly personnel at St John's institute for Health	
	Hard work and commitment	*Hard work and commitment was another factor. The programme required someone to work hard and be committed since we were learning while fulfilling other roles.*
		I. What factors affected your learning using the e-learning approach?
	Poor internet connectivity	**P.** *Sometimes with poor internet connectivity we could not search and access the information. But as the programme was going towards the end AMREF sponsored us with airtel mifi for us to access internet. The time we were starting the*

	Lack of knowledge and skill on operation of laptop and internet Little time for face to face much of topics were self directed learning Multiple roles a lot of work to do. Short period of face to face Un conducive small library Erratic internet connectivity	*programme we were blank about the laptop and internet especially on how to operate and access it. When we enrolled into the e-learning upgrading programme and reported at College the ICT personnel who works at the library assisted us and we learnt a lot. We had like one week of face to face learning followed by learning from home so with multiple roles the programme required someone to work hard and sweat. Since we had little time for face to face much of the topics were self directed learning while few topics were assignments. We were working on that while at the same fulfilling different roles; being a mother, aunt, wife, granddaughter and student. Sometimes at work they would say come and work here. We had a lot of things to do. Sometimes during the one week of face to face you could get the news that your granny has died then you have also to concentrate on family issues. So it was a challenge when you have distractions during the face to face time since when that period has ended it was somehow not possible to have your own face to face session. However, the teachers were flexible and assisted us so much in a sense that they gave us liberty to call them anytime. So that was the experience. But the main challenge was that the period of face to face was just too short. The content that would be covered for six weeks was just done in one week. So it was a challenge. The other thing is that the library was small though I was studying there but the environment was not conducive to me. It was not only that but also the e-learning centers supplied with desktops and internet in some hospital was not reliable because of erratic internet connectivity. Aaah, sometimes those things were not working when at central hospital, but there were there. We were going there during clinical practice especially when*

	in some e-learning centers Nothing was achieved most of the times Lack of support from duty station. Improve on internet connectivity and power supply Liase with internet and power service providers: MTL, TNM and ESCOM. Provision of essential books to be used while learning	*we had group assignment but nothing was achieved most of the times. We could depend much on personal internet either by using the phone or laptop. The other challenge was lack of support from duty station. It was difficult because sometimes we could be on night duty while the face to face session was in progress. When we go in class we were just sleeping. That's why I said the Lecturers at the College were friendly because when someone is sleeping in class they could wake him up. Those Lecturers were friendly but at work it was not friendly at all. Mmhu, it was harsh!* **I.** How can e-learning mode be improved? **P.** *Of course to me it is a very good teaching and learning approach because you have the opportunity to learn while doing other personal things. So it is a good platform only that you should just improve on internet connectivity and power. It is so challenging if the Electricity Supply Corporation of Malawi's power is not there and your laptop is power dependant.* *For network, it is all about first talking to the internet service providers like airtel MTL and TNM. Because sometimes you find that you want to download something and network is not there. So it becomes difficult. In terms of power liase with ESCOM so that power should be available all day. The other thing to improve on is the provision of essential books just few books to students to be using while learning from home. When you are given assignments at home you also need books because books are easy to read as you can even read using torch during blackout. The books will also be included in your references because you cannot just have websites only. Those books should be*

	from home Have a conducive library with a variety of books Face to face period to be revised from 1 to 3 or 6 weeks Scholarship to include both tuition and accommodation Upload all course content including electronic skills and should be accessed offline	*submitted back at the end of the course. The other thing is to have a good library with a variety of books and good environment. Extension of the face to face period from one week to 3 or 6 weeks could be ideal for adult learners. It is not ideal to cover the 6 weeks content in one week. In case of scholarship the Sponsor should consider providing funds for everything thus both Tuition and accommodation. Because when we talk about kkk school it requires a lot of things. We cannot talk about e-learning platform without money. Internet bundle and travelling to e-learning centers need money. Internet is needed throughout the study period. I thank God that I did not spend much on internet because I was going to St John's institute for Health to access it. When the Sponsor does not pay for everything how are you going to travel? What are you going to pay for accommodation? How are you going to do things? E-learners have no accommodation on campus hence they have to find their own accommodation especially those whose workplace is farther from the training institution.* *In terms of content you can upload everything. When it is already uploaded you just download and can refer to it later without using internet. However, sometimes the challenge is that even if you upload you find that may be the whole page is not visible or blank maybe because the document was infected by viruses. In addition, electronic skills should also be uploaded so that a student can easily watch the uploaded video, be able to demonstrate the skill step by step and refer back when not sure of what to do. Uploading everything could be helpful because you are sure that students will access the required information that will make them to become safe practitioners.*

TRANSCRIPTION (INDEPTH INTERVIEWS)

Experiences of Registered Nurse Midwives with e-learning mode from Ekwendeni College of Health Sciences

		Participant code: Participant # 4-M-10-05 **Age range**: 42-49 **Sex**: Male **Marital status**: Married **Type of health facility**: District Hospital **Additional responsibility**: Fistula Coordinator
	CODES	
		PLATFORMS AND APPLICATIONS USED
	Tablet phone, laptops, emails, one to one phone call At first had some challenges After orientation could use	**I**. What platforms and applications did you use during your e-learning upgrading programme? **P.** *We had a tablet phone and we still have it. We were also using laptops. The information or modules which we were using most of the times was uploaded in these gadgets. The uploading was firstly done in the laptop followed by tablet phone. We were also using emails to access and upload information and assignments. Sometimes we could use phone call to ask for clarification on the topic learnt. It was a one to one phone call.* **I.** How was your experience with e-learning platforms and applications? **P.** *At first we had some challenges but later on after an orientation we could use the platforms and applications without problems. However, in terms of accessing information from the internet it was a challenge sometimes*

	platforms and applications without problems Challenge in accessing online information due to network problem. Assisted by Lecturers after consultation.	*because of network problem. May be because our programme was a pilot one that is why we had such challenges of network. In addition, we were being assisted by our Lecturers after consulting them in case of any problem.*
		INFORMATION QUALITY
	Proper time management Support from Hospital Management even at ward level; allowed him to go to school, could be considered for off duties to finalise assignments and prepare for exams Good environment at workplace and time for discussions with students from different schools. Provision of tablet phone by AMREF.	**I.** What factors facilitated your learning using the e-learning approach? **P.** *In fact, we had to divide our time. When it was time for school, I had to utilise that time for school. If it was time to provide nursing and midwifery care to clients at our hospital I had to do that. Proper time management assisted me to accomplish school and all multiple roles that I had. The support from Hospital Management is another factor that facilitated my learning through e-learning mode. Firstly, they gave me an opportunity to learn. They could also consider me with some off duty days so that I concentrate on the assignments and studies in preparation of examinations. Furthermore, they gave us a good environment and time for discussions with students from different schools doing clinical practice at the Hospital. This support was also being provided at ward level as they also accepted to give me the two days off in a week for assignments and group discussions. The day off was on Monday and Tuesday. The other thing that facilitated learning is the provision of tablet phone by AMREF. The phone assisted us very much because it was easy to operate, fast in terms of internet, accessing information and sending*

		assignments. Before the tablet phone was given to us, we had challenges in sending our assignments.
		I. What factors affected your learning using the e-learning approach?
	Erratic internet connectivity in the e-learning center Simultaneous conflicting of roles Power blackout	**P.** *We encountered some challenges. Erratic internet connectivity in the e-learning center. At first, we were communicated that we will easily access the information on internet but as time went on the internet accessibility in the e-center like Mzuzu Central Hospital flopped and there was no internet accessibility. So we had to use our own money to buy internet bundle in order to access information from the internet. Another challenge was that of simultaneous conflicting of roles. It was being noted that the time when we were reporting for face to face at our college, it was also the time when our duty stations and families needed us more. It was really challenging to concentrate on school during that time. The other challenge was black out. For the past 3 months we had many blackouts. During the same period we also had assignments with due dates to submit to our different Lecturers. Black out made us sometimes not to submit the assignment in good time. It was a problem so we had to struggle in sending our assignments due to blackouts.*
		I. How can e-learning mode be improved?
	Training institutions to orient hospital management on advantages of e-learning	**P.** *Firstly, the training institutions should educate or orient the Hospital Management on advantages of e-learning. If our managers are oriented on this, it will be easy for them to allow their Nurses and Midwives to enroll into the programme. If our managers do not know about this*

	Students should be provided with a gadget at the beginning f the programme Prior communication to candidates about e-learning programme admission requirement. *More use of synchronous teaching and learning using either zoom or Google class.* Improve internet connectivity in e-learning centers College to produce and provide some hard copies of	*programme they will not allow their nurses to enroll into the programme and resistance will continue. Another challenge to improve on is that of inability of some students to access gadgets. Students should be provided with a gadget if possible at the start of the programme and not towards the end. If it is given towards the end of the programme student might not benefit much the intended purpose of that gadget and might have failed past assignment because of being not able to search for the information for his assignment. However, We should not have that tendency of saying that we should be provided with gadgets but I think people should be informed about e-learning programme admission requirement or materials to be brought like gadget. This will facilitate good preparation in terms of procuring necessary equipment and resources to be used at school. Another thing which you need to improve on is the adoption of synchronous teaching and learning using either zoom or Google class. This virtual class will provide an instant opportunity to ask questions on the presentation and be answered at the same time because there would be a direct contact with the Lecturer.* *So in terms of erratic internet connectivity, there is need to improve on e-learning centers' internet because internet cannot be everywhere. But they should improve on areas where we already have e-learning centers with desktops which help students to access information easily. Another suggestion is that the College should produce and provide to students some hard copies of course modules for the whole programme. Each student will be directed to read the different course modules at a specific time during the programme. Remember in adult learning there is an internal motivation to learn. Therefore a student will be*

	modules for the whole programme	*able to access and read that information on time. Nevertheless, the College can just provide soft copies and student should be responsible to print those soft copies. Because the College cannot manage to print all the modules for students but can just provide soft copies*

TRANSCRIPTION (INDEPTH INTERVIEWS)

Experiences of Registered Nurse Midwives with e-learning mode from Ekwendeni College of Health Sciences

		Participant code: Participant # 5-F-16-05 **Age range**: 42-49 **Sex**: Female **Marital status**: Married **Type of health facility**: Central Hospital **Additional responsibility**: None
	CODES	
		PLATFORMS AND APPLICATIONS USED
	The disc, internet, laptop, tablet phone, AMREF app.	**I**. What platforms and applications did you use during your e-learning upgrading programme? **P.** *Most of the times we were using the disc that was given to us and it contained all the courses. We were also using the internet to search for more information. At first the application of the disc was uploaded in the laptops and later on it was uploaded in the tablet phone which we were given. The one which was installed in the tablet phone required us to be online to access the information while the one in the laptop was being accessed offline. The name of the*

		application was AMREF app. **I.** How was your experience with e-learning platforms and applications? **P.** *At first it was difficult because majority of us did not know how to operate a laptop. Eeeh it was tough. We were slow in typing the assignment. But after an orientation and having undergone an ICT course we were able to open and type on laptop. We realized that things were easy.*
	At first it was difficult It was tough Majority of students did not know how to operate a laptop Slow in typing the assignment After an orientation and ICT course were able to open and type on a laptop They realized that things were easy	
		INFORMATION QUALITY
		I. What factors facilitated your learning using the e-learning approach? **P.** *The support from Colleagues at the workplace in terms of giving me some time to concentrate on assignments assisted me a lot to finish the programme. The other thing kkkk is the support from my family. They assisted me with funds so that I pay for accommodation, buy food and internet bundle during the clinical*
	Support from colleagues and family AMREF financial	

	support ICT course imparted knowledge on how to submit an assignment electronically Financial challenge when clinical allocation was outside the workplace Poor and slow internet affected uploading and sending of assignment Lack of knowledge and skill in operating computer Workload/ no time to rest Intermittent internet	*practicum. AMREF supported us financially as it paid for our school fees. This relieved me so much from my financial problem. An orientation on ICT also helped us to have the knowledge on how to submit an assignment electronically.* **I.** What factors affected your learning using the e-learning approach? **P.** *As for me I had a challenge of finances especially when my clinical allocation was outside my workplace. That meant I needed to have money for transport, accommodation and food and also to support the family. In short everything needed money. This affected my concentration on school activities. Poor internet connectivity was another problem that I faced. Sometimes I could wait longer for the assignment to be uploaded and sent to the Lecturer due to slow internet. Despite that, at first we did not know how to type, upload and send the assignment and this made us to submit our assignment very late. The other challenge was that we did not have time to rest. During school holidays we were reporting for duties in our workplace while also working on assignments and preparing for examinations.* *Lastly, poor internet at the e-learning center which is also my workplace was another challenge. Most of the times when you go to the e-learning center or library you could find that there is no internet. So it was a problem to upload and download information.* **I.** How can e-learning mode be improved?

	connectivity Financial support to students in terms of scholarship Avoid repetition of NMT course content at RNM level. E-learning content not to be too much Availability of Lecturers both physically and online Good record keeping of student's assessment	**P.** Firstly, *support in terms of scholarship can relieve student's financial burden. With e-learning student has to have money to buy internet bundle without which a student cannot access information and lessons. The other thing to improve on is on course content. The upgrading programme had some content that we already covered in our previous Nurse Midwife Technician Programme. This made the content to be too much. Kkk both face to face and learning from home content was too much. It was just like repeating. It would be better if that content should be removed and just focus on the new content to be learnt at Registered Nurse Midwife level.* *The other way of improving e-learning is by ensuring availability of Lecturers. Most of the times Lecturers were not available both physically and online. The other area to improve on is record keeping. The Lecturers must make sure that they take care of all Nurses and Midwives council assessments forms done by students. In our case some of the Nurses and Midwives' Council assessment forms were missing and we realized this in our last week of coaching for licensure examination. Hence we did not write the licensure exams with our friends.*

TRANSCRIPTION (INDEPTH INTERVIEWS)

Experiences of Registered Nurse Midwives with e-learning mode from Ekwendeni College of Health Sciences

		Participant code: Participant # 6-F-17-05 **Age range**: 42-49 **Sex**: Female **Marital status**: Married **Type of health facility**: Mission Hospital **Additional responsibility**: Deputy incharge of maternity ward, CPD coordinator and chairperson of hot meal
	CODES	
		PLATFORMS AND APPLICATIONS USED
	AMREF application , tablet phone, smart phone, laptops and email Sometimes it was difficult because of erratic internet connectivity in the e-centre. Internet was down most of the times. Using laptop and tablet was easy	**I**. What platforms and applications did you use during your e-learning upgrading programme? **P.** *We had a certain application that we used for e-learning and it was installed in the tablet phone which we were given and our smart phones. We were also using laptops and email.* **I.** How was your experience with e-learning platforms and applications? **P.** *Sometimes it was difficult because of erratic internet connectivity in the e-learning centre. We were told that we have e-learning centres where the internet was available. However, internet was down most of the time in those e-learning centers. The tablet was uploaded with AMREF application and we could access the course content and it had enough space.* *This made the programme to be expensive since we were also using our own money to buy bundles so that we send assignments. Using the tablet and laptop was easy to me.*
		INFORMATION QUALITY
		I. What factors facilitated your learning using the e-learning

	Time management Support from focal personnel at e-learning center, matron and ward incharge, Lecturers and ICT officer at the College An orientation/ introduction to ICT course	approach? **P.** *It is all about time management. So I had to divide my time. When am at work I was doing what I was supposed to do. When am at home I was doing what I was supposed to do but also I had to spare sometime for school work during learning from home period. When it was time for face to face I was also focusing on school activities scheduled in that period. The e-learning approach was somehow good for me because I had time to go to school but also to fulfill other responsibilities since I had time to be at home with the family and even go to work as I was not at the College full time.* *The other factor that facilitated my learning is availability of support. Support from focal personnel at e-learning center. When we were learning from home, we could go to Mzuzu Central or St John's Institute of Health to access some of the course information and the focal person there helped us a lot.* *The Matron and Ward-In-Charge supported us a lot. They could give us off duties so that we complete our assignments and clinical assessments. Nevertheless, Lecturers also supported us because when we were home and had a problem we could call them and they could help us through the phone* *Some of the Lecturers were available all the time when we needed them: both physically and online.* *Lastly, an orientation on ICT during the orientation period facilitated my e-learning. Some of us were 'Born before the Computers.' We had an ICT officer special to teach us how to upload things, how to send emails and how to access internet on the computer.*

	Born before computers and lacked knowledge and skill in computer Too many courses to cover during the learning from home period. Hard to reach lectures during the learning from home period if you do not have airtime and bundle Poor internet connectivity affected submission of assignment in good time Time management due to multiple roles and workload during the holiday time Virtual sessions/	**I.** What factors affected your learning using the e-learning approach? **P.** *As I have already said that some of us were 'Born before the Computers,' so we had difficulties especially the time we were just starting the programme. We had difficulties in downloading, uploading and sending the assignment. When we were at school for face to face sessions, we were being assisted by colleagues who were conversant with laptops but when we are at home we could experience the problem. The problem was much experienced during the learning from home period as most of the assignments were done during that time. Sometimes I could struggle in sending the assignment to the extent of going beyond the due date. Sometimes it could be successfully sent after consulting somebody to help. The other challenge is that courses were too many as most of the times we were covering the course content alone at home and if someone had questions but no airtime or bundle, it was hard to reach the Lecturer. In times of poor internet connectivity at the e-learning center, it was so challenging to upload and send the assignment to the Lecturer, and more difficult if you didn't have money for bundles.* *Sometimes time management was a challenge.When we were on school holiday, we were expected to be at work due to inadequate staffing. However, we also had more assignments and clinical assessments plus case studies to do. If I decided not to report for duty and just go to do clinical assessments I would be called to go to work. I could leave the assessments and go for work. It was difficult to manage time.*

	synchronous learning Have e-learning centers with reliable internet connectivity	**I.** How can e-learning mode be improved? **P.** *I think online tutorials can help since it can be like we are in class and interacting with our Lecturer. If they are questions during that time, we ask and get answers at the same time. So the online tutorials, I think can be of help. The other suggestion is that maybe if there can be e-learning centers with reliable internet connectivity so that students can be utilizing it without struggling to find money to buy bundles.*

TRANSCRIPTION (INDEPTH INTERVIEWS)

Experiences of Registered Nurse Midwives with e-learning mode from Ekwendeni College of Health Sciences

		Participant code: Participant # 7-M-23-05 **Age range**: 50-57 **Sex**: Male **Marital status**: Married **Type of health facility**: Community Hospital

		Additional responsibility: Incharge Maternity ward
	CODES	
		PLATFORMS AND APPLICATIONS USED
	Phone, AMREF application, computer, WhatsApp, Google	**I.** What platforms and applications did you use during your e-learning upgrading programme? **P.** *We were using phone to search and downloading information. We were also using electronic notes which were given by AMREF and uploaded in our phone and computer by ICT personnel from the College. We also used WhatsApp. We could also search information on Google to supplement on the AMREF notes*
	Was very nice Could search information on Google and send assignment through an email. Typing speed was a problem Could type one page for two days	**I.** How was your experience with e-learning platforms and applications? **P.** *It was very nice! We could search information on Google to supplement on the AMREF notes. I could send my assignment through an e-mail. I did not have challenges because I was using my Mifi given by AMREF and bundle to download and send assignments. However, typing speed was a problem. I could type one page for two days!*
		INFORMATION QUALITY
	Supportive wife	**I.** What factors facilitated your learning using the e-learning approach? **P.** *The supportive wife. She was encouraging me a lot with advice. In addition, she could source some money and*

	Support from workplace paid full salary and all allowances throughout the period of study. Scholarship from AMREF A lot of effort Power backup Pressure of work COVID- 19 resulted in withdraw from clinical area but kept paying for accommodation making e-learning to be cost ineffective. Blackout during rainy sesaon and erratic fuel supply Unavailability of some Lecturers both physically and online Pressure of work resulting	*support me with it. The institution where am working though they did not pay school fees and give me stationery, they also supported me by paying full salary including all allowances that am entitled to get throughout the period of my study. The schools fees that AMREF paid also relieved me from the financial challenges that I had. Online learning requires a lot of effort. The other thing is that I had power backup and was able to work on assignment. Here we have 24 hours solar power system and generator. We even charge our laptop and phone from there.* **I.** What factors affected your learning using the e-learning approach? **P.** *Pressure of work. I was farming, working and doing school. Sometimes it was costly especially during COVID-19. During that time I was doing clinical practicum at the District Health Facility and when schools closed I had to travel back to my duty station. However, I was still paying for accommodation which was also expensive just to secure a place since we were not yet done with clinical practice. When schools opened I had to travel back to the clinical practice area.* *The other challenge was a problem of power supply. It was being experienced when there was no sunlight especially during rainy season and when there was no fuel in the generator. Here we have 24 hours solar power system and generator. We even charge our laptop and phone from there.* *Sometimes some Lecturers could not be reached when we*

	into lack of support Possession of gadgets by students enrolled in e-learning programme Full time wifi at the training institution Uploading adequate information on topics whose information cannot be easily found Content to be accessed on phone All Lecturers to be involved in online teaching and learning	*needed clarifications on some of the topics: both physically and online. This challenge was experienced during face to face and working from home period as they were also busy with other programmes.* **I.** How can e-learning mode be improved? **P.** *On that part, I think students should ensure that they have phones and laptops because e-learning depends on these gadgets. It is difficult to learn without gadgets and I experienced this as I went to school without phone and laptop. I bought the smart phone very late.* *Smart phone was one of the requirements but because of financial challenges I did not manage to buy before opening school.* *I think there is need to make sure that there is full time wifi at the training institution. No time limits as it was with us during face to face period. We had internet connectivity from 7:30am to 9:00pm and 7:30am to 5:00pm during working and weekend days, respectively. Thereafter, we could have erratic internet connection. The other thing is on uploading adequate information on topics whose information cannot be easily found. The information should also be easily accessed through phone. Lastly, all Lecturers should be exposed to students not just few and specific Lecturers*

TRANSCRIPTION (INDEPTH INTERVIEWS)

Experiences of Registered Nurse Midwives with e-learning mode from Ekwendeni College of Health Sciences

		Participant code: Participant # 8-F-25-05 **Age range**: 42-49 **Sex**: Female **Marital status**: Married **Type of health facility**: Private Rural Health Center **Additional responsibility**: *HTC (HIV Testing and Counseling) Coordinator*
	CODES	
		PLATFORMS AND APPLICATIONS USED
		I. What platforms and applications did you use during your e-learning upgrading programme?

	Google, phone, laptop, emails and WhatsApp At first it was difficult to type on a laptop After learning an ICT course it was just simple and easy Could type the assignment, convert to PDF transfer to phone and send it to Tutors	**P.** *We were using Google most of the times. We used a phone and laptop to download the information for the four whole semesters and towards the end of the programme we were given a tablet phone by AMREF. Assignments were sent through WhatsApp or email. We had emails of all Tutors. So they could send us the assignments then after finishing we could submit back to the Tutor. Sometimes the assignments could be sent on the class's WhatsApp group and after working on it we could submit it using the same application and platform.* **I.** How was your experience with e-learning platforms and applications? **P**. *At first it was difficult to type on a laptop because it was the first time to use this thing. But after learning how to operate it, it was just simple and easy. After learning how to operate the laptop, I could type the assignment, convert it to PDF, transfer to phone and send it to the Tutor.* *We had an ICT course during the training. It was the first course to be covered and after that it is when we started practicing how to send the emails and upload information.*
		INFORMATION QUALITY
	Support from Colleagues at work and family Approval of paid study leave at the workplace	**I.** What factors facilitated your learning using the e-learning approach? **P**. *The support that I got from the family and my Colleagues from work facilitated my learning using the e-learning approach. Colleagues could give some time to work on my assignments and sometimes could make arrangements with my shift so as to create time for my*

		studies. In addition, being a private Rural Health Center I was allowed to get a paid leave during the period when I had no off days to utilise for my studies especially during face to face and clinical practice. I was maintained as one of the Nurse Midwife at the facility throughout my study period and there was no single day when I was told to resign so that I concentrate on my studies. At my work place it was difficult for someone to study and work at the same time but with e-learning, it was possible as I was able to do both work and school. E-learning was good for me. **I**. What factors affected your learning using the e-learning approach? **P**. *This was a new thing to us and Tutors as such it was difficult for them to get organised. When we reported for face to face sessions, we sometimes could find the Tutors not ready to teach and orient us on other things. We liaised with them to be planning in advance activities to be done during the face to face period. In clinical area, the challenge was that they assumed that we knew everything since we were already qualified Nurse Midwife Technicians yet we were upgrading to be Registered Nurse Midwife. The Tutors were supposed to inform and teach us of specific things that Registered Nurse Midwives are supposed to do in the ward. In spite of that, our Colleagues who were already Registered Nurse Midwives assisted us when we asked for help and could demonstrate to us on how procedures are done in the ward* *The other problem was money for bundle. E-learning required one to have a bundle so that you can Google and have the information. So you needed to have a lot of money to buy bundles. The other problem was poor internet*
	New thing to us and Tutors Difficult to get organized Tutors not ready to teach during face to face session In clinical area assumption that students knew everything since were already qualified Tutors not informing and teaching them specific things done by RNM in the ward	

	Money for bundle Poor internet connectivity Difficult to find on campus accommodation Some uploaded topics and courses had outdate information Possession of personal gadgets by students Direct students to reliable websites with credible information Start with face to face learning Communicate and emphasize on course expectations, topics and learning outcome	*connectivity. Sometimes the network was erratic to complete downloading and uploading the assignment. This made us either to wait or search for network in order to Google and complete the assignment. Sometimes assignments could not be delivered to Tutors. I realized this when my name could appear on the list of students whose assignment had not been submitted. So I had to check it and resubmit. Most of the times undelivered assignments were due to poor internet connectivity when it was being sent.* *The other factor that affected my learning was accommodation during face to face period. It was difficult to find accommodation at College's hostel.* *Lastly, Some courses and topics had outdated information uploaded in the application* **I.** How can e-learning mode be improved? **P.** *The best things to do in order to improve this online learning are: firstly, the students should have gadgets so that they can use. Then the students should be directed to websites where they can download reliable information pertaining to the course whenever they source for information. I understand there are a lot of websites on the internet with incredible information and are for free.* *Although it is online learning but it would be better to start with face to face learning. During that time, emphasize on the course expectations, basic information of a topic and learning outcomes should be well communicated to students. This will help students to be focused especially on areas related to that cadre, for example, Registered Nurse*

	Give an assignment for each topic Assess students to determine completion of the given assignment and level of understanding Training institutions should liase with internet service providers like Airtel and TNM to reduce bundle prices for students learning through online mode	*Midwife.* *Another suggestion on improving e-learning is that students should be given a lot of assignments. This will to keep them busy in finding more information about the topic. In our case we had a lot of assignments. I suggest that for each topic there should be at least an assignment. This would help to evaluate on whether learners have understood the topic or not. My experience in terms of assignments is that we had assignments that were selected randomly from topics.* *Yes. It is online and the student is learning from home and workplace. Sometimes he or she might not have read or worked on the self directed learning topics or might not have understood it. It is important to assess him or her on whether he understood it or not. This can be in form of a quiz or any form of assessment.* *Nowadays online learning is growing and is being adopted even in our Universities. Therefore training institutions should liaise with internet service providers like Airtel and TNM to reduce bundle prices for students learning through online mode*

TRANSCRIPTION (INDEPTH INTERVIEWS)

Experiences of Registered Nurse Midwives with e-learning mode from Ekwendeni College of Health Sciences

		Participant code: Participant # 9-F-25-05 **Age range**: 50-57 **Sex**: Female **Marital status**: Married **Type of health facility**: Urban Health Center **Additional responsibility**: Incharge Maternity ward and Coordinator of School Health Initiative and Nutrition (SHIN) programme
	CODES	
		PLATFORMS AND APPLICATIONS USED
	email, Google, phone, laptop	**I**. What platforms and applications did you use during your e-learning upgrading programme? **P.** *During my e-learning programme I was using email to send assignments that were being written while at home. We were also using Google to search as well as access the information from the application which we were provided with at school. Most of the times I was using phone to search for information of the assignment since my phone had bundle most of the times. I was typing on the laptop thereafter transfer it to the phone and send it through email to the Lecturer*
	Sometimes had some challenges. sometimes could not upload the assignment and download information thought it was her phone's	**I.** How was your experience with e-learning platforms and applications? **P.** *I had some challenges sometimes. I could not upload the assignments and sometimes download the information. At first I thought the problem was with my phone and could borrow my friend's phone to try sending the assignment but still could not be successful. Then we discovered that it was mostly due to internet connectivity challenge, more especially at the facility where I was doing clinical practice*

	problem but after borrowing a friend's phone still could not succeed, discovered it was internet connectivity challenge	*as the internet was available in some specific place like offices.*
		INFORMATION QUALITY
	Family support (daughter and husband) Time management Support from colleagues at workplace Pressure of work	**I.** What factors facilitated your learning using the e-learning approach? **P.** *My daughter helped me a lot in terms of searching for information for the assignment, typing and editing my work before sending to Lecturers. My husband again supported me. He could give me time to work on the assignment. The other thing is time management also facilitated my learning. As a mother I made sure that the home was in order by cleaning the house, making sure that food was available for the family and going for work. Before the day ended, I made sure that I also had time for my school since I had assignments with due dates. During the time of learning from home, my colleagues at the work place could assist me with information on some of the assignments. They also gave me some free time like one or two off duty days to complete the assignments since most of the times I was on duty. There was really support from the work place.* **I**. What factors affected your learning using the e-learning approach? **P.** *I could experience the pressure of work more especially when maybe the colleague is sick. I could come and work the whole day not even having some time to read as there were very few of us at the facility.* The other factor that affected my learning is travel expenses. *Since my duty*

	Accommodation and transport expenses Finding information from journals that are not open access Erratic internet connectivity Guardians to consider provision of gadgets to their children. If possible College and government may do that Donor support with gadgets to needy students	*station is a Health Center, I was expected to do my clinical practice at a district facility and this made me to be travelling a lot. During my school off duty days, especially weekends, I was travelling back to my duty station to report for duty. Had it been that we were allowed to do clinical practice at my duty station it could have been ok. I was spending a lot of money on accommodation and transport unlike our friends who were doing the clinical practicum at their duty station; it was cheap.* *Apart from finances, I also had a challenge in terms of finding the information and downloading books from websites that required us to pay and sometimes it needed a lot of bundles.* *I had erratic internet connectivity but when we were at school, during face to face period, we could have good internet connectivity. But here even at the facility where I was doing my clinical practice, it was erratic.* **I.** How can e-learning mode be improved? **P.** *If possible, consider providing gadgets to students who might not have them. It would be very helpful because if students have gadgets, they will not have difficulties in accessing information on the internet. If there is no such provision by the College were possible then the government may come in. I think guardians should ensure that they provide gadgets to their children. Moreover, donor support with gadgets to needy students would also assist. Providing technical support to students with challenges in using the application and sourcing of information from the internet so that they should be able to complete the assignments in good time. Such students can*

	Provision of technical support on ICT to students. Utilise synchronous instructional method	*be easily identified when synchronous instructional method is utilised.*