Journal of Centre for Distance & e-Learning
(JCDeL), Vol. 5, No. 1, 2026
ISSN: 1595-5362
https://cdeljournal.unn.edu.ng

ADDRESSING RURAL DIGITAL DIVIDES IN DELIVERING SEX EDUCATION FOR MATERNAL MORTALITY REDUCTION AMONG WOMEN IN ANAMBRA STATE

Ilukwe, Joy Ogochukwu & Ilukwe, Ugochukwu Uzo

Department of Continuing Education and Development Studies, University of Nigeria, Nsukka.
Department of Industrial Technical Education, University of Nigeria, Nsukka
joy.ilukwe@unn.edu.ng

Abstract

The study addressed rural digital divides in delivering sex education for maternal mortality reduction among women in Anambra State. It investigated how access to digital tools and platforms can enhance sex education programmes aimed at reducing maternal mortality among rural women. Two research purposes and research questions guided the study respectively, while one hypotheses guided the study. A descriptive survey research design was employed. The population consisted of 981 members of 49 registered women associations in rural areas of Anambra State, while a sample of 651 members from 31 associations was selected using a multi-stage sampling technique. Data were collected using a structured questionnaire titled Sex Education and Maternal Mortality Reduction through Digital Access Questionnaire (SEMMRDAQ). The instrument was face validated and demonstrated a reliability coefficient of 0.85 using the Cronbach alpha method. Data were analyzed using mean, standard deviation, and t-test statistics. Findings revealed that respondents perceived sex education delivered through digital platforms to contribute to the reduction of maternal mortality among rural women to a high extent. However, several challenges hindered the effective use of digital tools for sex education, including limited digital access, low digital literacy, and socio-cultural and religious barriers. Based on these findings, the study recommended that government agencies, NGOs, and community leaders collaborate to implement targeted interventions addressing rural digital divides. Such interventions could include community-based digital literacy programmes, affordable or subsidized access to digital devices, and culturally sensitive digital sex education content delivered via radio, mobile platforms, and social media.

.

Keywords: Sex education, Maternal mortality, Rural women, Digital divide, Distance education.

Introduction

Sex education is a crucial element of reproductive health education that enables women to make informed decisions regarding their sexual and reproductive health. Sex education is a thorough educational process designed to equip individuals with correct information, constructive attitudes, values, and skills essential for making responsible decisions around sexuality and relationships. UNESCO (2018) defines comprehensive sexuality education as a means to provide young individuals with the knowledge, skills, attitudes, and values necessary for fostering health, well being, dignity, respectful relationships, informed decision-making, and safeguarding against sexual dangers and detrimental practices. It also fosters self-awareness, accountability, respect for others, and the capacity to make informed decisions concerning sexual activity.Operationally,

sex education is a structured program that offers individuals critical information and direction regarding human sexuality, far beyond conventional discussions of anatomy and reproduction.

The primary objective of sex education is to provide individuals with the knowledge and skills necessary to make informed decisions about their sexuality, relationships, and reproductive health. The risk of unintended pregnancies and pregnancy-related complications is elevated, particularly among women who have undergone prior caesarean deliveries, due to a lack of comprehension regarding sexual matters. The World Health Organization (2023) underscores that inadequate sexual and reproductive health education is a contributing factor to adverse health outcomes, including HIV, unintended pregnancies, and other infections. Anayochukwu (2022) conducted research that demonstrated a robust correlation between unplanned pregnancies and elevated rates of maternal mortality and illness. In the same vein, the United Nations Population Fund (UNFPA, 2019) contends that the provision of sex education that is accessible, voluntary, safe, and affordable, with a particular emphasis on family planning, can reduce the risk of unintended pregnancies and reduce maternal mortality. Despite the importance of sex education, its impact is restricted in rural areas due to delivery challenges, such as low literacy, lack of access to information, and cultural or religious restrictions that discourage discussions on sexual and reproductive health. These challenges necessitate alternative approaches capable of extending educational opportunities beyond conventional face-to-face settings, particularly through distance education.

Distance education platforms and digital technologies provide viable means of overcoming these barriers by enabling the remote delivery of structured educational content to underserved populations. Distance education is a structured learning arrangement that bridges the gap between knowledge providers and rural populations by delivering educational content remotely through various communication technologies (Ekwu & Ogu, 2025). Jegede (2016) defines distance education as an instructional approach distinct from traditional face-to-face methods, wherein educators and students are physically separated, and instruction is conveyed through various media, including print and information and communication technologies (ICTs). Distance education is a potent method for providing sex education to rural women, particularly in regions where traditional educational infrastructure is restricted, in the context of reproductive health. Women can easily access interactive learning modules on a variety of topics, including family planning, safe pregnancy practices, contraceptive use, and identifying danger indicators during pregnancy, through mobile applications. Women have the opportunity to participate in virtual discussions, ask enquiries anonymously, and receive timely guidance from healthcare professionals through online platforms, such as social media groups and websites. Radio programs and recordings provide women with limited internet access or low literacy levels with alternative channels to access accurate sexual and reproductive health information in their native languages. Research has shown that the delivery of maternal and child health services can be enhanced in areas where in-person training or facilities are limited by digital interventions, such as mobile and online resources (Ebenso et al., 2021). Distance education can bridge rural digital divides by utilizing these diverse digital media, ensuring that women who may be precluded from formal education can still acquire the necessary knowledge and skills to make informed decisions about their sexual and reproductive health. Moreover, these digital channels offer self-paced, adaptable learning, enabling women to access information at their convenience without the need to travel long distances to health centers or educational institutions. However, the

effectiveness of distance education for sex education depends on addressing existing digital divide.

The digital divide and socio-cultural factors frequently impede the efficacy of digital sex education in rural areas, despite its benefits. Dijk (2020) elucidated that the digital divide is a multifaceted notion encompassing disparities in access to digital resources, discrepancies in digital capabilities, and variations in the outcomes derived from technology use. Agboola and Olatunde (2019) have observed that the ability of women to consistently access online platforms, mobile applications, or other digital media is restricted in numerous rural communities due to low internet penetration, limited access to smartphones or laptops, and unreliable electricity levels. Furthermore, the quality and efficacy of these interventions are frequently compromised by a dearth of trained facilitators who can contextualize content, provide support, and guide women through digital learning. The digital divide is further exacerbated by the low literacy levels of rural women, who may find it difficult to understand textual or technical content, navigate digital platforms, or interpret health information accurately (Ogbuagu et al., 2021). Insufficient local healthcare support can limit the impact of digital education, even when it is available and understood. Women may acquire knowledge about maternal health risks but lack access to skilled birth attendants or emergency care, thereby diminishing the practical benefits of the education (Nwankwo & Edeh, 2019). The efficacy of digital sex education is also restricted by socio-cultural factors, in addition to technological constraints. The discussion of sexual health is often considered taboo due to cultural norms and religious beliefs, which leads to resistance from community leaders, families, and even the women themselves (Ezeh et al., 2020). These profoundly ingrained social and cultural barriers can obstruct women from openly engaging with educational content, asking questions, or adopting recommended practices. Collectively, the digital divide and socio-cultural constraints underscore the necessity of technologically appropriate, culturally sensitive, and targeted interventions to guarantee that rural women can access and benefit from digital sex education, thereby enhancing maternal health outcomes.This study defines digital divide as a disparity faced by rural women in Anambra State concerning access to, proficiency in utilising, and the advantages gained from digital tools for obtaining sexual education.The acquisition of essential reproductive health information that is necessary to make informed decisions and prevent pregnancy-related complications may be impacted by these digital inequalities by women. As a result, it is crucial to comprehend the health consequences that are linked to inadequate access to this information, particularly in the context of maternal mortality.

Maternal mortality is the term used to describe the demise of women during pregnancy or within 42 days of delivery. The preventable character of the majority of maternal deaths is underscored by the fact that maternal mortality encompasses deaths caused by pregnancy-related complications, as per the World Health Organization (2021). Adebayo et al. (2020) emphasize the importance of timely medical intervention and access to quality healthcare services in the reduction of maternal mortality. In this investigation, maternal mortality is operationally defined as the death of rural women during pregnancy or within 42 days of delivery as a result of preventable or uncontrollable complications. Rural women are those who live in less urbanised or mostly agricultural areas, where access to important services such as healthcare, education, digital technology, and basic infrastructure is frequently restricted. The Food and Agriculture Organization (FAO, 2020) asserts that rural women significantly contribute to agricultural productivity, household welfare, food security, and community

development, notwithstanding their disparities in access to education, healthcare, productive resources, and economic possibilities. Likewise, Okon et al. (2021) noted that rural women often face numerous obstacles in obtaining vital social services due to geographic isolation, insufficient infrastructure, and socioeconomic disadvantages. These difficulties restrict their access to prompt reproductive health information and high-quality maternity healthcare treatments. In this study, rural women refer to women residing in rural communities of Anambra State who are predominantly engaged in farming, petty trading, and other informal economic activities. Because this group experiences multiple barriers to accessing reproductive health information, researchers have increasingly explored the potential of digital technologies and distance education to bridge these gaps. In this study, rural women are women who live in less urbanized areas where access to healthcare services, educational opportunities, digital technologies, and reproductive health information may be limited due to infrastructural and socioeconomic constraints.

These constraints have heightened the need for evidence-based interventions that utilize digital platforms to expand access to reproductive health education and empower women with knowledge necessary for informed decision-making. Consequently, numerous empirical investigations have analysed the application of digital technologies to advance reproductive health education. Ebenso et al. (2021) indicated that digital health interventions enhanced maternal and child health knowledge among women in resource-limited settings by enabling prompt access to health information and communication with healthcare providers. Okafor et al. (2024) similarly found that educational interventions enhanced women's knowledge of birth preparedness and complication readiness, including awareness of maternal health practices necessary for safe pregnancy outcomes. Research in West Africa has shown the efficacy of digital platforms in providing reproductive health education. Babatunde et al. (2025) demonstrated that mobile-based educational applications can enhance access to maternal health information and support pregnant women's knowledge and decision-making regarding pregnancy care.Similarly, UNESCO (2018) and UNFPA (2019) indicated that comprehensive sexuality education enhances reproductive health knowledge, promotes contraceptive utilisation, postpones early pregnancies, and diminishes maternal health issues.

Research has similarly found enduring digital disparities impacting rural people. Agboola and Olatunde (2019) indicated that insufficient internet access, erratic electrical supply, and limited ownership of digital devices persist as significant obstacles to digital education in rural Nigeria. Ogbuagu et al. (2021) additionally noted that inadequate digital literacy and insufficient educational achievement diminish rural women's capacity to benefit from digital health education. Ezeh et al. (2020) similarly demonstrated that cultural attitudes and religious standards persist in restricting the acceptability of sex education among rural women. The analysed literature reveals that prior research has separately investigated comprehensive sexuality education, digital health treatments, maternal healthcare utilisation, and digital literacy in rural communities. While these studies have shown favourable results, they have predominantly concentrated on the efficacy of sex education programmes, mobile health interventions, or maternal healthcare services as distinct fields of inquiry. Limited empirical research has unified the rural digital divide, distance education, sex education, and maternal mortality reduction within a singular paradigm, especially concerning rural women in Anambra State. Furthermore, scant empirical information is available regarding the impact of constraints such as insufficient internet access, inadequate digital infrastructure, low digital literacy, poverty,

cultural attitudes, and limited government backing on the provision of digital sex education aimed at reducing maternal mortality.

The current study is anchored on Digital Divide Theory, which elucidates disparities in access to, use of, and benefits derived from information and communication technologies (ICTs), serves as the foundation of this investigation. The digital divide, as defined by van Dijk (2020), encompasses disparities in digital skills, internet connectivity, the affordability of digital devices, and the ability to effectively utilise digital technologies, in addition to physical access. The theory is especially pertinent to this study due to the fact that rural women frequently encounter financial constraints, low digital literacy, poor internet connectivity, and limited access to digital infrastructure, all of which impede their eligibility for digitally delivered sex education. These obstacles impede access to critical reproductive health information regarding family planning, pregnancy care, and maternal health, thereby elevating the likelihood of adverse maternal health outcomes. The Digital Divide Theory offers a suitable framework for investigating how the reduction of digital inequalities can enhance the knowledge of maternal health among rural women in Anambra State and improve the delivery of sex education through distance education platforms. Consequently, it serves as the foundation for this investigation's emphasis on the mitigation of maternal mortality by addressing rural digital divides.

This study addresses the gap by examining the rural digital divide in the provision of sex education aimed at reducing maternal mortality among women in Anambra State. The results are anticipated to furnish evidence for policymakers, distance education practitioners, reproductive health educators, and development organisations regarding measures to enhance digital access to reproductive health education for rural women.

Statement of the Problem

Maternal mortality remains one of the most serious public health challenges globally, with the greatest burden occurring in developing countries, particularly in sub-Saharan Africa. Despite considerable efforts by governments, international organizations, and healthcare providers to improve maternal health, Nigeria continues to record one of the highest maternal mortality ratios in the world. Ideally, every woman of reproductive age should have equitable access to comprehensive sexual and reproductive health information that enables informed decisions regarding family planning, pregnancy, childbirth, and maternal healthcare. Comprehensive sex education plays a critical role in achieving this objective by equipping women with accurate knowledge and practical skills for preventing unintended pregnancies, recognizing pregnancy-related danger signs, and utilizing appropriate maternal healthcare services. The emergence of digital technologies and distance education has created new opportunities for delivering sex education to women, particularly those living in rural and underserved communities. Through mobile phones, internet-based learning platforms, radio programmes, social media, and other digital communication technologies, reproductive health information can be delivered conveniently, cost-effectively, and beyond the limitations of conventional face-to-face education. Such digital approaches have the potential to improve women's access to timely and reliable information, thereby contributing to the reduction of maternal mortality.

However, many rural communities in Anambra State continue to experience significant digital inequalities that limit women's access to digitally delivered sex education. Poor internet connectivity, inadequate electricity supply, limited ownership of digital devices, low digital

literacy, poverty, and insufficient digital infrastructure restrict the effective utilization of digital learning platforms. These technological barriers are further compounded by cultural beliefs, religious norms, misconceptions about sex education, and inadequate government support, all of which reduce women's access to essential reproductive health information. Consequently, many rural women remain vulnerable to preventable pregnancy-related complications and maternal deaths despite the availability of digital technologies capable of improving access to reproductive health education. Although previous studies have examined sex education, digital health interventions, maternal healthcare utilization, and digital literacy separately, limited empirical evidence exists on how addressing rural digital divides can improve the delivery of sex education for maternal mortality reduction among rural women in Anambra State. This gap in knowledge creates uncertainty regarding the specific digital barriers affecting access to sex education and the extent to which reducing these barriers can improve maternal health outcomes. It is against this background that this study seeks to examine addressing rural digital divides in delivering sex education for maternal mortality reduction among women in Anambra State.

Purpose of the Study

The general purpose of the study is to examine how rural digital divides in delivering sex education for maternal mortality reduction among women in Anambra State. Specifically, the study seeks to:

1. Determine the extent to which sex education delivered via digital platforms combats maternal mortality among rural women of reproductive age in Anambra State.
2. Examine the challenges hindering the use of digital platforms to deliver sex education for maternal mortality reduction among rural women of reproductive age in Anambra State.

Research Questions

The study is guided by the following research questions:

1. To what extent does sex education delivered through digital platforms combat maternal mortality among rural women of reproductive age in Anambra State?
2. What are the challenges hindering the use of digital platforms to deliver sex education for maternal mortality reduction among rural women of reproductive age in Anambra State?

Hypothesis

The following null hypothesis was tested at the 0.05 level of significance:

H01: There is no significant difference between the mean ratings of members of registered women associations who are civil servants and those who are self-employed on the extent to which sex education delivered via digital platforms combats maternal mortality among rural women of reproductive age in Anambra State.

Method

The study adopted a descriptive survey research design and was carried out in Anambra State, Nigeria. The population of the study comprised 981 members of 49 registered women associations in rural areas of selected Local Government Areas (LGAs) in the state. A sample of 651 members from 31 registered women associations was selected using a multi-stage sampling procedure. At the first stage, the six education zones in Anambra State, namely Aguata, Awka,

Nnewi, Ogidi, Onitsha, and Otuocha Education Zones, constituted the sampling frame. The education zones were considered as the major geographical strata for the study. Three education zones, namely Ogidi, Onitsha, and Otuocha Education Zones, were purposively selected because they had a high concentration of registered rural women associations and provided adequate representation of the target population. The selection was also informed by the need to capture communities where organized women groups were actively involved in social and community development activities relevant to the study. At the second stage, five Local Government Areas (LGAs) were purposively selected from the three education zones based on the availability and concentration of registered rural women associations. The selected LGAs were Oyi Local Government Area in Ogidi Education Zone; Ogbaru Local Government Area in Onitsha Education Zone; and Anambra East, Anambra West, and Ayamelum Local Government Areas in Otuocha Education Zone. These five LGAs comprised a total of 49 registered women associations with 981 members. Specifically, Oyi Local Government Area had 10 registered women associations with 190 members; Ogbaru Local Government Area had 14 associations with 285 members; Anambra East Local Government Area had 6 associations with 127 members; Anambra West Local Government Area had 11 associations with 221 members; and Ayamelum Local Government Area had 8 associations with 158 members. At the third stage, 31 out of the 49 registered women associations (63.27%) were selected through purposive sampling. The selection was based on clearly defined criteria, including active operation, regular meeting schedules, availability of registered members, and willingness of members to participate in the study. The selection of 31 associations was considered adequate to ensure broad representation of the study population while maintaining a manageable scope for effective data collection. At the fourth stage, the respondents were selected from the sampled associations. Proportionate sampling technique was first used to determine the number of respondents selected from each Local Government Area based on the membership strength of the selected associations. Thereafter, simple random sampling technique using balloting without replacement was employed to select individual respondents from the associations. A total of 651 members, representing 66.36% of the population, were selected. The distribution of sampled respondents was as follows: Oyi Local Government Area 6 associations with 134 members; Ogbaru Local Government Area 9 associations with 181 members; Anambra East Local Government Area 4 associations with 81 members; Anambra West Local Government Area 7 associations with 153 members; and Ayamelum Local Government Area 5 associations with 102 members.

The instrument for data collection was a researcher-developed questionnaire titled “Sex Education and Maternal Mortality Reduction through Digital Access Questionnaire (SEMMRDAQ).” The instrument was designed along 4 point rating scale of VHE, HE,LE and VLE as well as Strongly Agree (SA) Agree (A) Disagree (D) and Strongly Disagree (SD). real limit of numbers were 3.50-4.00= VHE, 2.50-3.49 = HE, 1.50-2.49 = LE and 1.00-1.49 = VLE was used to interprete research questions one. while research question two was interpreted using criterion mean of 2.50, where responses of 2.50 and above represented were accepted while those below 2.50 benchmark were rejected. The instrument was subjected to face validation by three experts: two experts from the Department of Continuing Education and Development Studies and one expert from the Measurement and Evaluation Unit of the Department of Science Education, all in the University of Nigeria, Nsukka. The experts examined the instrument in terms of relevance, clarity, adequacy, and appropriateness of the items in relation to the objectives of the study. The reliability of the instrument was established through a pilot test

conducted among 19 members of Oganiru Umuonyia Women Association in Enugwu-Umuonyia Community, Orumba South Local Government Area of Aguata Education Zone, Anambra State. Aguata Education Zone was excluded from the main study but was considered suitable for the pilot test because it shares similar socio-cultural characteristics with the study area, including language, cultural values, religious practices, community structures, norms, and social interactions. The internal consistency reliability of the instrument was determined using the Cronbach Alpha reliability method. The reliability coefficients obtained for the clusters were as follows: Cluster A = 0.79, Cluster B = 0.61, Cluster C = 0.78, and Cluster D = 0.78, while the overall reliability coefficient of the instrument was 0.83. The overall coefficient indicated that the instrument had an acceptable level of internal consistency and was considered suitable for data collection. Data were collected through the administration of the structured questionnaire to the selected respondents with the assistance of trained research assistants. The completed questionnaires were retrieved immediately after completion to ensure a high response rate. The data collected were analyzed using mean and standard deviation to answer the research questions, while t-test statistics were used to test the null hypotheses at the 0.05 level of significance.

Results

Research question one: To what extent does sex education delivered through digital platforms combat maternal mortality among rural women of reproductive age in Anambra State?

Table 1

Mean Responses on the Extent to which Sex Education delivered through digital platforms Combats Maternal Mortality amongRural Women of Reproductive Age in Anambra State.

N = 651

S/No.	Extent sex education combats delivered via digital platforms maternal mortality among ruralwomen of reproductive age	Mean	SD	Decision
1.	Helping in improving child spacing.	3.77	.489	VHE
2.	Assisting in learning the best sex position during pregnancy.	3.34	.602	HE
3.	Reducing abortion level.	3.40	.611	HE
4.	Teaching women the safest sex period.	3.25	.633	HE
5.	Teaching women birth control is mostly for those who gave birth through cesarean.	3.27	.706	HE
6.	Reducing miscarriage as a result of sexual intercourse during pregnancy.	3.13	.739	HE
7.	Avoiding unwanted economic crises that are associated with high blood pressure.	3.10	.732	HE
8.	Enhancing proper family planning.	3.15	.667	HE

9.	Availing the women proper information on the right mood for sexual intercourse.	3.29	.657	HE
10.	Avoiding sexual transmissible infections.	3.13	.656	HE
	Cluster Mean	**3.28**	**.213**	**HE**

*Note: * VHE = Very High Extent; HE = High Extent; SD = Standard Deviation*

Table 1 above shows the mean values and standard deviations of the respondents' responses on the extent to which sex education delivered via digital platforms combats maternal mortality among rural women ofreproductive age in Anambra State. Data on Table 1 showed that one out of 10 items (item 1) hadthe mean value of 3.77 and standard deviation of 0.489. The data showed that the mean value was within the real time limit of 3.50-4.00; indicating that sex education combats maternal mortality among rural women of reproductive age in Anambra State to a very high extent on the item. However, the data showed that 9 items (item 22, 23, 24, 25, 26, 27, 28, 29 and 30) had their mean values and standard deviation as 3.34 (0.602), 3.40 (0.611), 3.25 (0.633), 3.27 (0.706), 3.13 (0.739), 3.10 (0.732), 3.15 (0.667), 3.29 (0.657) and 3.13 (0.656). The data showed that the meanvalues of the items ranged from 3.10-3.40. Each of these values was within the real time limit of 2.50-3.49; indicating that sex education combats maternal mortality among rural women of reproductive age in Anambra State to a high extent on the nine items. The results based on the cluster mean of 3.28 and standard deviation of 0.213 indicated that to a high extent sex education combats maternal mortality among rural women of reproductive age in Anambra State.

Hypothesis One

There is no significant difference between the mean ratings of members of registered women associations who are civil servants and those who are self-employed on the extent to which sex education delivered via digital platforms combats maternal mortality among rural women of reproductive age in Anambra State.

Data for testing null hypothesis one were presented on Table 2:

Table 2

t-test of Significant Difference in the Mean Ratings of Members of Registered Women Associations who are Civil Servants and those who are Self-Employed on the Extent to which Sex Education delivered via digital platforms combats Maternal Mortality among Rural Women of Reproductive Age

Occupation	N	Mean	SD	t	Df	Sig. (2-tailed)	Decision
Civil Service	159	3.31	.675				
Self-employed	415	3.45	.591				
				2.76	572	.01	S
Grand total				**-1.46**	**572**	**.15**	**NS**

Table 2 above shows the analysis of t-test statistics on the extent to which sex extension education delivered via digital platforms combats maternal mortality among rural women of

reproductive age in Anambra State. Data on Table 6 showed that five out of the 10 items (item 21, 23, 26, 27 and 30) had their t Calculated significant values at 0.04, 0.01, 0.00, 0.00 and 0.03 respectively. These significant values were less than 0.05; indicating that there was significant difference between the mean ratings of members of registered women associations who are civil servants and those who are self-employed on the five items. However, five items (item 22, 24, 25, 28 and 29) had their t- Calculated significant values at 0.39, 0.15, 0.59, 0.47 and 0.91 respectively. The significant values were greater than 0.05; indicating that there was no significant difference between the mean ratingsmembers of registered women associations who are civil servants and those who are self-employed on the ten items. The grand total of the t-Calculated value was significant at 0.15. This value was more that0.05; indicating that there was no significant difference between the mean ratings members of registered women associations who are civil servants and those who are self-employed on the extent to which sex extension education delivered via digital platforms combats maternal mortality among rural women of reproductive age in Anambra State.

Research question two: What are the challenges hindering the use of digital platforms to deliver sex education for maternal mortality reduction among rural women of reproductive age in Anambra State?

Table 3: Mean responses on the challenges militating the use of sex education to combats maternal mortality among rural women of reproductive age.
N = 651

S/No.	Extent health and nutrition education reduces maternal mortality among rural women of reproductive age	Mean	SD	Decision
1.	I am not aware that digital platforms provide sex education.	2.93	.45	A
2.	Cultural beliefs and traditions in my community make it difficult to access sex education online.	3.08	.55	A
3.	Religious practices in my community discourage participation in digital sex education.	3.14	.64	A
4.	There are not enough trained personnel to guide women in accessing digital sex education.	3.07	.57	A
5.	Poverty and lack of financial resources limit my ability to access digital sex education.	2.97	.62	A
6.	Poor internet connectivity and lack of electricity make it difficult to participate in digital sex education programmes.	3.18	.67	A
7.	Misconceptions and stigma about sex education prevent me from using digital platforms to learn about it.	3.62	.49	AS
8.	Limited government support and policies reduce the availability of digital sex education in my community.	2.97	.62	AS
9.	Language barriers and low literacy make it hard to understand digital sex education content.			AS
Grand Mean		**3.26**	**0.56**	**A**

Data from Table 3 showed the mean responses on the challenges militating the use of digital sex education to combat maternal mortality among rural women of reproductive age in

Anambra State. The findings revealed that limited awareness of digital sex education had a mean of 2.93, indicating it is a notable barrier. Cultural beliefs and traditions hinder access to digital sex education, with a mean of 3.08, while religious practices that discourage discussions on sex education recorded a mean of 3.07. Inadequate access to trained personnel for delivering digital sex education had a mean of 3.18, and poverty or lack of resources limiting access to digital platforms showed a mean of 2.97. Poor digital infrastructure, including unreliable internet and electricity, had a mean of 3.14. Misconceptions and social stigma surrounding sex education recorded a mean of 3.62, limited government support and policies had a mean of 3.76, and language barriers or low literacy among rural women had a mean of 3.62. The grand mean score of M = 3.26 and standard deviation of SD = 0.56 indicated that all the items in this cluster were generally accepted as significant challenges affecting the use of digital sex education to combat maternal mortality among rural women of reproductive age in Anambra State.

Discussion

The findings from Research Question One revealed that sex education delivered via digital platforms combats maternal mortality among rural women of reproductive age in Anambra State to a high extent. The findings indicate that sex education delivered via digital platforms contributes to improved child spacing, reduction of unsafe abortion practices, increased knowledge of reproductive health practices, awareness of appropriate sexual behaviour during pregnancy, understanding of family planning methods, and knowledge of safe periods for conception. These findings suggest that sex education serves as an important extension education intervention for improving women's reproductive health literacy and promoting safe motherhood practices among rural women. The finding agrees with Afshar et al. (2012), who reported that educational interventions among pregnant women improved aspects of sexual health, including sexual function and informed decision-making during pregnancy. The authors noted that pregnancy-related sexual concerns can be addressed through appropriate education and counselling, which enables women and their partners to adopt safe sexual practices during pregnancy. However, the application of such education within rural communities requires culturally appropriate approaches that consider women's social environments and access to reliable information. Furthermore, the finding is consistent with the assertion of the United Nations Population Fund (UNFPA, 2019) that accessible and adequate sexual and reproductive health education, including family planning information and services, contributes to reducing unintended pregnancies and preventing maternal deaths associated with unsafe reproductive practices. Similarly, the World Health Organization (WHO, 2019) emphasized that reproductive health education improves women's knowledge, decision-making capacity, and utilization of essential maternal health services.

In the context of this study, sex education is particularly important among rural women because limited access to health information often contributes to poor maternal health outcomes. Through effective extension education approaches, women can acquire knowledge about antenatal care, pregnancy danger signs, birth preparedness, skilled birth attendance, contraception, and timely referral for obstetric complications. Starrs et al. (2018) emphasized that empowering women with sexual and reproductive health information strengthens their autonomy, improves healthcare-seeking behaviour, and promotes positive maternal health outcomes.

Importantly, the findings also highlight the relevance of digital access as an emerging

pathway for delivering sex education to rural women. Digital platforms such as mobile phones, online health education resources, social media, and telehealth services provide opportunities for expanding access to reproductive health information beyond traditional face-to-face extension approaches. Digital health interventions can support women by providing timely information on family planning, antenatal care, maternal danger signs, and available health services, thereby improving their ability to make informed reproductive health decisions.

This finding aligns with the growing evidence that digital technologies can enhance health education and service accessibility, particularly among populations that experience geographical barriers to healthcare information. However, the effectiveness of digital sex education among rural women depends on factors such as availability of mobile devices, internet connectivity, digital literacy, affordability of data services, and cultural acceptance. According to the World Health Organization (2021), digital health interventions have significant potential to strengthen health promotion and improve access to health information, especially among underserved populations, but unequal access to digital technologies may widen existing health inequalities if not properly addressed. The findings therefore suggest that combining conventional extension education methods with digital approaches can provide a more inclusive strategy for reducing maternal mortality among rural women in Anambra State.

The findings from the test of hypothesis one showed that there was no significant difference in the mean ratings of members of registered women associations who were civil servants and those who were self-employed regarding the extent to which sex extension education combats maternal mortality among rural women of reproductive age in Anambra State. This implies that respondents across both occupational groups shared similar perceptions regarding the contribution of sex education to maternal mortality reduction. The similarity in responses may be attributed to the fact that reproductive health challenges, including inadequate knowledge of family planning, pregnancy complications, and limited access to maternal health information, affect women irrespective of occupational status. It also suggests that sex education interventions are considered valuable among rural women regardless of employment category. Furthermore, with increasing access to digital communication technologies, reproductive health information can potentially reach women across different socioeconomic groups, provided that barriers such as digital literacy, affordability, and connectivity are addressed.

The findings from research question two revealed that the major challenges militating against the use of sex education in combating maternal mortality among rural women of reproductive age in Anambra State include lack of awareness about sex education, cultural beliefs and traditions, and religious practices that discourage discussions about sexuality and reproductive health. The finding agrees with previous studies that identified inadequate awareness and limited access to accurate reproductive health information as major barriers to improving maternal health outcomes in Nigeria. Nwaozuru et al. (2021) noted that knowledge gaps in sexual and reproductive health contribute significantly to poor maternal health outcomes. When women lack reliable information, they may adopt unsafe reproductive practices, delay seeking healthcare, or fail to recognize pregnancy-related danger signs. Cultural beliefs and traditions also remain important barriers to effective sex education in rural communities. In many societies, discussions about sexual and reproductive health are considered private matters and may be surrounded by stigma. Such cultural restrictions can prevent women from seeking information about contraception, pregnancy care, and maternal health services. Fantaye et al. (2019) observed that cultural perceptions and social norms often limit acceptance of reproductive

health education programmes in rural communities. Similarly, religious beliefs may influence attitudes toward sex education. Some communities perceive discussions about sexuality as inappropriate, which may discourage women from accessing reproductive health information. Ogbonna and Eze (2019) reported that religious misconceptions can negatively affect acceptance of comprehensive reproductive health education. Beyond cultural and religious barriers, the findings should also be interpreted within the context of the digital divide, which represents a significant challenge to the use of digital platforms for sex education among rural women. Although digital technologies provide opportunities for improving access to reproductive health information, many rural women face barriers such as poor internet connectivity, limited ownership of smartphones, high cost of data services, low digital literacy, and inadequate confidence in using digital platforms. These barriers may restrict the benefits of digital health education and reinforce existing inequalities. According to WHO (2021), successful digital health interventions require consideration of infrastructure, users' digital skills, affordability, and social acceptance. Therefore, while digital access provides a promising avenue for extending sex education to rural women, efforts must address digital inequality through improved rural connectivity, digital literacy training, and community-based digital extension programmes.

Conclusion

Based on the findings of the study, it was concluded that sex education contributes to combating maternal mortality among rural women of reproductive age in Anambra State to a high extent. The study established that sex education enhances women's knowledge and decision-making regarding family planning, child spacing, pregnancy-related danger signs, safe motherhood practices, and timely utilization of maternal healthcare services. Furthermore, digital platforms provide an important avenue for extending sex education to rural women by improving access to reproductive health information, promoting continuous learning, and overcoming some geographical and communication barriers associated with conventional health education approaches.

However, the effective use of sex education and digital platforms for reducing maternal mortality among rural women is constrained by several challenges, including inadequate awareness of sex education, cultural beliefs and traditions that limit discussions on sexual and reproductive health, religious concerns, and digital access barriers such as limited digital literacy, poor internet connectivity, inadequate access to digital devices, and the cost of data services. It was therefore concluded that integrating sex education with accessible digital extension strategies, while addressing sociocultural and digital inequalities, is essential for improving reproductive health knowledge and reducing preventable maternal complications and deaths among rural women in Anambra State.

Recommendation

Based on the findings of the study, it was recommended that:

1. Government agencies, non-governmental organizations (NGOs), and relevant partners should develop and implement digital sex education programs specifically targeting rural women of reproductive age. Government agencies, non-governmental organizations (NGOs), and relevant partners should take the lead in creating and executing digital sex education programs. Government agencies, non-governmental organizations (NGOs), and relevant partners should develop and implement digital sex education programs. These digital sex education programs

should be developed and implemented by government agencies, non-governmental organizations (NGOs), and relevant partners. To provide ongoing information on family planning, pregnancy danger signs, prenatal care, safe motherhood practices, and maternal healthcare services, these programs should make use of easily accessible digital platforms, such as mobile health applications, SMS services, WhatsApp-based learning groups, and other distance education techniques, to lessen the digital divide among rural women, these efforts should be bolstered by better rural digital infrastructure, reasonably priced internet access, and the availability of digital devices.

2. To encourage rural women to adopt and effectively use digital sex education programs, extension educators, community leaders, religious organizations, and traditional leaders should work together, to address cultural and religious misconceptions, boost women's confidence in using digital platforms, and guarantee that reproductive health information delivered through ICT-based approaches is culturally appropriate, accessible, and effective in lowering avoidable maternal complications and deaths, sensitization and digital literacy training programs should be organized.

References

Adebayo, A., Adebola, O., & Yusuf, M. (2020). Challenges in reducing maternal mortality in sub-Saharan Africa: A focus on Nigeria. *African Health Sciences, 20*(3), 1237–1245.

Afshar, M., Mohammad-Alizadeh-Charandabi, S., Merghti-Khoei, E. S., & Yavarikia, P. (2012). The effect of sex education on the sexual function of women in the first half of pregnancy: A randomized controlled trial. *Journal of Caring Sciences, 1*(4), 173–181. https://doi.org/10.5681/jcs.025

Agboola, S., & Olatunde, S. (2019). Barriers to effective sexual and reproductive health education in rural Nigeria. *Journal of Health Education Research, 34*(2), 145–157.

American Academy of Pediatrics. (2024). The importance of access to comprehensive sex education. https://www.aap.org/en/patient-care/adolescent-sexual-health/equitable-access-to-sexual-and-reproductive-health-care-for-all-youth/the-importance-of-access-to-comprehensive-sex-education/

Anayochukwu, G. I. (2022). Teenage pregnancy and its consequences: Evidence from a Southeastern rural community of Nigeria. *Journal of Social and Health Education, 2*(3). https://doi.org/10.35912/jshe.v2i3.977

Babatunde, A. O., Ayede, A. I., Colangelo, A., Nguyen, T. D., Aborode, A. T., Umeh, C., Hernandez, M. P., Ayede, O. I., & Ayede, O. O. (2025). Development of an educational and monitoring mobile application for pregnant women in Nigeria. *Frontiers in Public Health, 12*, Article 1368631. https://doi.org/10.3389/fpubh.2024.1368631

Ebenso, B., Okusanya, B., Okunade, K., Akeju, D., Ajepe, A., Akaba, G. O., Yalma, R. M., Dirisu, O., Tukur, J., Abdullahi, M. K., Okuzu, O., & Allsop, M. J. (2021). *What are the contextual enablers and impacts of using digital technology to extend maternal and child health services to rural areas? Findings of a qualitative study from Nigeria*. Frontiers in Global Women's Health, 2, 670494. https://doi.org/10.3389/fgwh.2021.670494

Ekwu, U. S., & Ogu, O. G. (2025). The future of open and distance learning in Nigeria: Opportunities and challenges in higher education. *Naveen International Journal of Multidisciplinary Sciences, 1*(4), 66–79. https://doi.org/10.71126/nijms.v1i4.39

Ezeh, P., Okonkwo, C., & Umeh, G. (2020). Cultural challenges in implementing reproductive health education in Nigeria. *African Journal of Health Studies, 12*(3), 78–89.

Fantaye, A. W., Okonofua, F. E., Ntoimo, L. F. C., & Yaya, S. (2019). A qualitative study of community elders' perceptions about the underutilization of formal maternal care and maternal death in rural Nigeria. *Reproductive Health, 16*, Article 164. https://doi.org/10.1186/s12978-019-0831-5

Jegede, O. J. (2016). *Open and Distance Learning Practices in Nigerian Higher Institutions of Learning*. Keynote address presented at the 3rd University of Ibadan Annual Distance Learning Centre Distinguished Lecture and Stakeholders' Forum, University of Ibadan, Ibadan, Nigeria.

Nwankwo, I., & Edeh, C. (2019). The role of healthcare infrastructure in addressing maternal mortality in Nigeria. *International Journal of Healthcare Services, 15*(4), 201–216.

Nwaozuru, U., Orji, O., & Ezenwagu, C. (2021). Awareness and utilization of reproductive health services in rural communities of southeastern Nigeria. *Journal of Health Education Research, 15*(2), 67–79.

Ogbonna, A., & Eze, R. (2019). Religious barriers to sex education in Nigeria: Implications for public health. *Nigerian Journal of Public Health, 10*(1), 23–30.

Ogbuagu, K., Okoroafor, E., & Nwachukwu, T. (2021). The impact of literacy on maternal health outcomes in rural Nigeria. *African Journal of Educational Development, 19*(1), 95–110.

Okafor, I. P., Balogun, M. R., Sekoni, A. O., Dolapo, D. C., Hawkins, C. A., & Afolabi, B. B. (2024). Effectiveness of multimethod, community-based educational interventions on the knowledge and attitude to birth preparedness and complications readiness among women in southwest Nigeria. *BMJ Public Health, 2*(1), e000203. https://doi.org/10.1136/bmjph-2023-000203

Okon, B., Eze, P., & Nkang, N. (2021). Empowering rural women for sustainable development: Challenges and prospects. *Journal of Rural Development Studies, 15*(2), 45–59.

Starrs, A. M., Ezeh, A. C., Barker, G., Basu, A., Bertrand, J. T., Blum, R., Coll-Seck, A. M., Grover, A., Laski, L., Roa, M., Sathar, Z., Say, L., Serour, G. I., Singh, S., Stenberg, K., Temmerman, M., Biddlecom, A., Popinchalk, A., Summers, C., & Ashford, L. S. (2018). Accelerate progress sexual and reproductive health and rights for all: Report of the Guttmacher–Lancet Commission. *The Lancet, 391*(10140), 2642–2692. https://doi.org/10.1016/S0140-6736(18)30293-9

United Nations Educational, Scientific and Cultural Organization (UNESCO). (2018). *International technical guidance on sexuality education: An evidence-informed approach* (Revised edition). UNESCO.

United Nations Population Fund (UNFPA). (2019). *Sexual and reproductive health and rights: An essential element of universal health coverage*. UNFPA.

van Dijk, J. A. G. M. (2020). *The digital divide*. Polity Press.

World Health Organization (WHO). (2019). *WHO recommendations on adolescent sexual and reproductive health and rights*. World Health Organization.

World Health Organization (WHO). (2021). *Global strategy on digital health 2020–2025*. World Health Organization.

World Health Organization. (2023). *Violence against women: Key facts*. World Health Organization. https://www.who.int/news-room/fact-sheets/detail/violence-against-women