Digital Technology Utilization in Reproductive Health Promotion: A Systematic Literature Review Analysis

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Abstract. Digital technology has emerged as an important tool in promoting reproductive health, particularly in addressing accessibility challenges in remote areas and among vulnerable populations. This study aims to evaluate the effectiveness of digital technology in reproductive health promotion based on a literature review. This study employed a systematic literature review approach using PRISMA. The search strategy employed Boolean logic to develop keywords covering various aspects of the research topic. Keywords used included "digital technology" AND "health promotion" AND "reproductive health" OR "sexual reproductive health." Articles were searched through Scopus, PubMed, ProQuest. A total of 17 relevant studies published between 2019 and 2025 were included in the final analysis. The findings indicate that digital technologies—such as mobile health applications, telemedicine, social media platforms, and chatbots—**improve access to reproductive health information, increase knowledge and awareness, and support service utilization**, particularly among adolescents and women in underserved areas. However, barriers related to digital literacy, infrastructure limitations, and data privacy concerns remain significant. The most commonly used technologies include health apps, social media, and telemedicine. There are barriers and opportunities in utilizing digital technology in the context of reproductive health. Conclusion: This study provides valuable insights for policymakers, health practitioners, and technology developers to optimize the use of digital technologies to improve reproductive health while advancing equitable access to health services in the community.

Keywords: digital technology; health promotion; reproductive health; systematic review

1 Introduction

An important global development aspect is reproductive health to achieve the Sustainable Development Goals (SDGs), third goal of which focuses on health and well-being of people. Twenty-five years of progress at global and regional levels has included adolescent health, namely sexual health, reproductive health, and adolescent rights. It is higher on the agenda for investment in health to build evidence-based epidemiology, establish norms for guidance and action [1]. However, it is still significant in challenge

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of providing accurate and equitable reproductive health information, especially in areas with limited access to health services [2]. Various problems faced by girls who are victims of sexual and family violence, namely reproductive health, psychological, educational, economic and social problems in the community [3].

In today's modernization era that is all digital and all uses internet access, digital technology is one of the main solutions to overcome providing challenges reproductive health promotion, especially to adolescents. Sophisticated innovations collaborating health science and technological advances, such as health apps, social media, telemedicine, and web-based platforms have enabled reproductive health information dissemination to be more widespread, efficient, and easily accessible to anyone [4]. These digital technologies can not only help increase knowledge, but also provide access to more inclusive health services, especially for vulnerable groups such as adolescents, women in remote areas, and those who face social stigma related to reproductive health. Evolving digital health strategies can be used to further develop integrated services that inform about gang violence, partner violence and are useful in improving adolescent health outcomes [5, 6]Reproductive health promotion through digital technologies is critical and increasingly relevant in COVID-19 pandemic context. Physical limitations and reliance on technology during pandemic have accelerated digital services adoption in various life aspects, including health [7]. Applications such as health chat-bots, online consultation platforms, and social media campaigns have been widely used to promote reproductive health during this difficult time .Digital technology adoption that began during Covid-19 pandemic has taken root today in everyone.

Successful digital technology utilization also faces its own challenges described by several studies, namely there are obstacles such as low digital literacy, limited internet infrastructure, and access inequality between certain social groups are still the main obstacles [8]. Actually, challenges in providing reproductive health information to various age groups and regions, especially remote areas, can be overcome by digital technology [9]. However, concerns arise regarding data privacy and user information security, especially in reproductive health issues context that are often considered sensitive [10].

Based on the above description, an in-depth systematic study is needed to evaluate how digital technology has contributed to reproductive health promotion, in terms of effectiveness, accessibility, and sustainability. This study will provide valuable insights for policy makers, health practitioners, and technology developers in optimizing the role of digital technology for reproductive health. This study was conducted with the aim to analyze various literatures related to use of digital technology in reproductive health promotion, explore its impact, and identify opportunities and challenges. Results of this study are expected to provide strategic recommendations to improve the efficiency and reproductive health services inclusiveness in digital era.

This research aims to: 1) Evaluate digital technology effectiveness in reproductive health education based on literature studies; 2) Identify digital technology types that are most widely used and their impact on reproductive health; 3) Analyze the barriers and opportunities for use of digital technology in reproductive health context

2 Method

This study employed a Systematic Literature Review (SLR) using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to ensure a transparent and rigorous review process. The literature search was conducted across three major academic databases: PubMed, Scopus, and ProQuest, selected for their comprehensive coverage of health and social science research.

The search strategy utilized Boolean operators with the following keywords: "digital technology" AND "health promotion" AND "reproductive health" OR "sexual and reproductive health." The inclusion criteria were: (1) peer-reviewed articles published between 2019 and 2025, (2) articles written in English, (3) studies focusing on the use of digital technology in reproductive or sexual health promotion, and (4) studies reporting empirical findings or systematic reviews. Articles were excluded if they did not directly address reproductive health outcomes or focused solely on technological development without health-related implications.

The study selection process followed PRISMA procedures, including identification, screening, eligibility assessment, and final inclusion. Titles and abstracts were screened for relevance, followed by full-text review. Data were extracted systematically, including study design, country, population, type of digital technology, outcomes, and key findings.

A thematic analysis approach was used to synthesize the data, focusing on three main themes: effectiveness of digital technology, types of digital interventions used, and barriers and opportunities in implementation. This approach enabled a comprehensive understanding of patterns and gaps in the current literature.

PRISMA methodology ensured a systematic and rigorous approach in identifying and selecting relevant studies for this review. From an initial pool of articles identified through database searches, refined selection process screened studies that met the inclusion criteria, focusing on use of digital technologies in reproductive health promotion. Final set of studies was carefully reviewed to extract key insights on effectiveness, accessibility and challenges associated with digital health interventions. PRISMA flowchart can be seen in Figure 1.

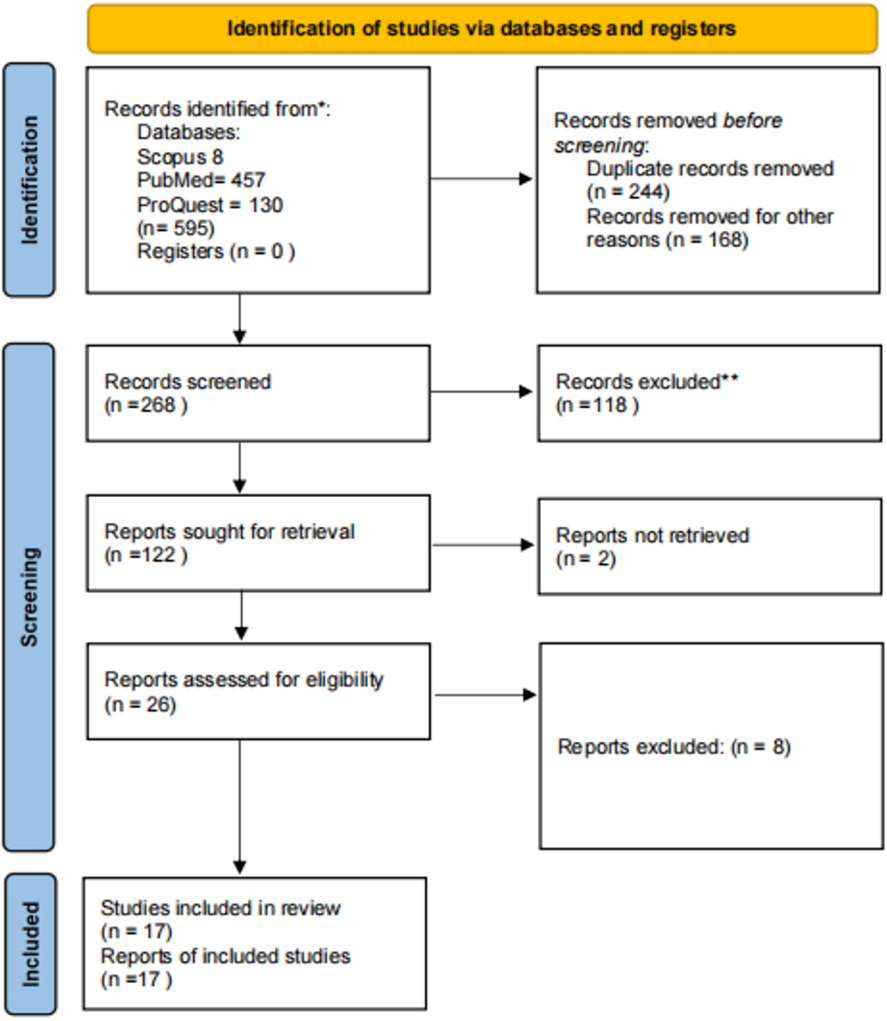

Fig. 1. PRISMA flow diagram

Accompanying literature review table presents detailed synthesis of these studies, highlighting their research objectives, methodology, findings and implications. This comprehensive review provides basis for understanding current landscape of digital health applications in reproductive health and identifies gaps and opportunities for future research and practice. This study used thematic approach to evaluate effectiveness, technology types, and challenges.

Based on findings summarized in literature review table, it is clear that digital technologies have significantly influenced reproductive health promotion in various contexts. Reviewed studies highlight digital interventions potential, such as telemedicine,

mobile health apps, and online education platforms, to increase knowledge, improve accessibility, and reduce stigma associated with reproductive health issues. These interventions have proven to be highly effective in reaching underserved populations, including adolescents, women in remote areas, and other vulnerable groups.

However, implementing digital health solutions is not without its challenges. Issues such as limited digital literacy, inadequate infrastructure, and concerns about data privacy remain key barriers. This discussion addresses these findings in detail, discussing digital technology effectiveness, its role in reaching marginalized communities, and the challenges that must be overcome to optimize its impact. It also provides strategic recommendations to overcome these barriers and leverage digital tools to achieve equitable and sustainable improvements in reproductive health outcomes. Following is information obtained based on Table 1.

Table 1. Summary of Paper

No.	Title	Year	Author(s), Year	Country	Stdy Design	Aims	Sample Size	Digital Tech Used	Outcome Measure
1	Implementing digital sexual and reproductive health care services in youth clinics: a qualitative study on perceived barriers and facilitators among midwives in Stockholm, Sweden	2024	Linn Zettergren, Elin C Larsson, Lovisa Hellsten, Kyriaki Kosidou, Anna Maria Nielsen	Sweden (Stockholm)	Qualitative semi-structured interviews, content analysis guided by CFIR	Identify barriers and facilitators to digital sexual and reproductive health services implementation in adolescent clinics and understand midwives perspectives in Stockholm, Sweden, on how these digital services can be effectively implemented.	16 midwives (from 15 clinics)	Video consultations and asynchronous chat via regional app (“Always Open” / “Alltid Öppet”); integrated online youth clinic	Midwives’ perceptions of barriers & facilitators for implementing digital SRH services in youth clinics [11]
2	Using Digital Technology for Sexual and Reproductive Health: Are Programs Adequately Considering Risk?	2021	Loraine J. Bacchus, Kate Reiss, Gereja Kathryn, Manuela Colombini, Erin Pearson, Ruchira Naved, Chris Smith, Kathryn Andersen, Caroline Free		Literatur review	Potential benefits and using digital technologies risks in sexual and reproductive health (SRH) interventions. Any four steps to mitigate potential harms that may arise from use of digital technologies.			While digital technologies offer significant opportunities to improve access to and SRH services quality, there are significant risks that need to be addressed, particularly regarding user privacy and confidentiality. (1) consider potential harms during intervention design, (2) minimize risks in the design phase, (3) measure negative outcomes during implementation, and (4)

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									plan support for those who report negative outcomes. By following these steps, digital interventions can be designed to be safer and more effective, while protecting individuals, particularly women who are vulnerable to domestic violence and social stigma. safe and effective [12]
3	Fulfilling the promise of digital health interventions (DHI) to promote women's sexual, reproductive and mental health in the aftermath of COVID-19	2022	Vijay Kumar Chattu, Claudia Abreu Lopes, Sumbal Javed, Sanni Yaya		Literatur review	increase understanding of the role and digital health technologies potential in improving health outcomes for women, and call for action to address existing challenges.			Discusses how digital health interventions can improve equity in sexual and reproductive health, including challenges and opportunities faced. Digital innovation importance in health sector, especially for women. There is push to develop and strengthen health systems to be more responsive to population needs, while ensuring equitable access through inclusive digital approaches. [13]
4	Telehealth use for sexual and reproductive health promotion and care during the early phase of COVID-19 pandemic: A descriptive-interpretive qualitative study of healthcare providers' perspectives	2023	Sadandaula Rose Muheriwa-Matemba, Danielle C Alcena-Stiner, Alexander Glazier, Natalie M LeBlanc		Qualitative	explore HCP (Healthcare Provider) perspectives and experiences regarding telehealth for SRH promotion and care, including counseling, testing, and HIV and sexually transmitted infections (STIs) treatment.			Explored healthcare providers' using telehealth experiences in sexual and reproductive health promotion and care. Although all providers reported increased use of telehealth, experiences in delivering sexual and reproductive health services varied. Some providers felt they had more time to consult with patients as patients could easily schedule telehealth visits, while others

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	and experiences in Western-Central New York State								faced technological limitations among some patients that affected care [14]
5	Revolutionizing Healthcare: How Telemedicine Is Improving Patient Outcomes and Expanding Access to Care	2024	Victor C Ezeamii, Okelue E Okobi, Hassana Wambai-Sani, Gamamedaliyanage S Perera, Shakhnoza Zaynieva, Chinwe C Okonkwo, Mohamed M Ohaiba, Pamela C William-Enemali, Okiemute R Obodo, Ngozika G Obiefuna		Literatur review	Analyze how telemedicine works and its implementation in health system, its impact on health and access to services in remote areas			Explore how telemedicine improves access to healthcare, reduces costs, and provides greater privacy for women regarding reproductive health issues. Provides insights into how health policies can adapt to support and integrate telemedicine more broadly into health systems [7]
6	Telemedicine for family planning: A scoping review. Obstetrics and Gynecology Clinics of North America	2020	Thompson TA, Sonalkar S, Butler JL, Grossman D		Scoping review	Identify and evaluate how telemedicine is used in Family Planning context which includes benefits, challenges and limitations in use of telemedicine.			Telemedicine has potential to increase access to family planning. Most common applications involve use of text message reminders and mobile apps. Text messaging increased knowledge in various settings but had no effect on contraceptive use and adoption. Two randomized studies found that text messaging increased continued use of oral and injectable contraceptives. Providing medical abortions via telemedicine has been shown to be as safe and effective as face-to-face deliveries [15]

No.	Title	Year	Author(s), Year	Country	Stdy Design	Aims	Sample Size	Digital Tech Used	Outcome Measure
7	Efficacy of a Digital Health Tool on Contraceptive Ideation and Use in Nigeria: Results of a Cluster-Randomized Control Trial	2019	Babalola S, Loehr C, Oyenubi O, Ajao B, Rimal RN		Cluster-randomized control trial	The use of mobile phone technology has increased significantly in Nigeria, opening up opportunities for programs to use this medium to reach target audiences with health protection information.			This study evaluated the effectiveness of an interactive voice-based digital health tool in increasing contraceptive ideation and use in Nigeria. Intervention was effective in improving ideation and relevant behavioral outcomes. For example, goal-based analysis results showed that the intervention increased women's confidence levels to discuss family planning with their providers [9]
8	A Systematic Review of the Effectiveness of Telemedicine in Reproductive and Neonatal Health in Rural and Low-Income Areas in India	2022	Siddhartha S Peri, Ann D Bagchi, Alok Baveja		Sistematic review	Identify initiatives that have evidence of potential public health benefits through large-scale implementation.			The use of telemedicine interventions can have statistically significant impact through educational impact. There are several limitations associated with use of technology and in improving reproductive and neonatal health in rural and low-income areas of India that need to be addressed [16]
9	A Framework for Femtech: Guiding Principles for Developing Digital Reproductive Health Tools in the United States	2022	Krishnamurti T, Davis AL, Wong-Parodi G, Fischhoff B, Sadovsky Y, Simhan HN		Framework Development	Establish robust framework for development of digital reproductive health tools (femtech) in United States, which developers, researchers, and stakeholders can follow.			Suggests framework for digital reproductive health tools development in United States, through Holistic approach. To create integrated framework, considering various aspects including ethics, technology, and user needs, which have not been specifically addressed in femtech focusing field on Reproductive Health by providing specific

No.	Title	Year	Author(s), Year	Country	Stdy Design	Aims	Sample Size	Digital Tech Used	Outcome Measure
									guidelines for reproductive health tools development that may receive less attention than other health aspects in digital health technology [17]
10	Applying technology to promote sexual and reproductive health and prevent gender based violence for adolescents in low and middle-income countries: digital health strategies synthesis from an umbrella review	2022	Keng-Yen Huang, Manasi Kumar, Sabrina Cheng, Anya Elena Urcuyo, Paul Macharia		An umbrella review	Identifying SRH Challenges by Gathering evidence on the challenges adolescents in LMICs face related to reproductive health and development, including gender-based violence (GBV) and domestic violence (IPV).			Digital health strategies implementation to promote adolescent reproductive health is feasible and acceptable to users. Although there is sufficient evidence, there are no strong recommendations for interventions and best practices at this time. However, some user-centered design guidelines have been proposed for web-based health information and health app design for adolescents. Several digital health strategies have been identified that can be used to develop integrated services that address domestic violence, domestic violence, and reproductive health to improve adolescent health outcomes [4]
11	Impact of telemedicine on assisted reproduction treatment in the public health systemImpacto de la telemedicina en la reproducción asistida en el sistema	2020	C. Hernández, C.J. Valdera, J. Cordero, E. López, J. Plaza, M. Albi		a retrospective cohort study	Measure treatment and implementing clinical benefits an electronic patient portal (EPP) for patients scheduled for assisted reproductive treatment (ART).			The use of telemedicine through electronic patient portals has been shown to reduce total waiting time involved in infertility treatment requests and indirectly increase the number of patients treated, without negatively impacting treatment outcomes [18]

No.	Title	Year	Author(s), Year	Country	Stdy Design	Aims	Sample Size	Digital Tech Used	Outcome Measure
	público de salud								
1 2	The effectiveness of interactive mobile health technologies in improving antenatal care service utilization in Dodoma region, Tanzania: A quasi-Experimental study	2023	Theresia J Masoi, Stephen M Kibusi, Deogratius Bintabara, Athanase Lilungulu		quasi-experimental design	Assessing Effectiveness of Interactive Mobile Health Technology by Measuring how effective use of interactive mobile health technology is in increasing antenatal care (ANC) services utilization for pregnant women and newborn health services in Dodoma region of Tanzania.			This study assessed interactive mobile health technology effectiveness in improving antenatal service utilization in the Dodoma region of Tanzania. About 77.3% of participants in intervention group utilized adequate antenatal services, compared to 57.7% in control group. The utilization criterion was Interactive mobile health technology system was found to be effective in improving antenatal service utilization [8](Masoi et al., 2023)
13	Correlates of sexual and reproductive health service utilization among older adults in China: Findings from the sexual well-being (SWELL) study	2024	Xin Peng , Bingyi Wang, Xinyi Li , Yuwei Li , Yong Lu, Jiewei Liu, Lin Ouyang, Guohui Wu, Yong Cai, Maohe Yu, Joseph D Tucker, Weiming Tang, Dan Wu, Xiaojun Meng, Huachun Zou		Regression logistic	Assessing SRH health service utilization and its correlates among elderly people in China.			Reproductive health services utilization in elderly is low, especially in elderly men who perform urological screening. Tailored reproductive health messages and services for elderly are needed to increase reproductive health services utilization [19](Peng et al., 2024)
14	Chatbots to Improve Sexual and Reproductive Health: Realist Synthesis	2023	Rhiana Mills, Emily Rose Mangone, Neal Lesh, Diwakar Mohan, Paula Baraitser		qualitative	Identify assumptions about chatbots value for SRH and gather evidence to support them.			Chatbots are promising intervention for delivery of sexual and reproductive health (SRH) information and services. This is because chatbots offer anonymous, non-judgmental interactions that encourage

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									personal information disclosure, providing complex information in responsive and conversational tone that enhances understanding. However, chatbots may be less valuable if people find conversations about SRH (even with chatbots) embarrassing, for those without confidential access to digital devices, where conversations do not feel natural [20]Mills et al., 2023)
15	Assessing the impact of online postal self-sampling for sexually transmitted infections on health inequalities, access to care and clinical outcomes in the UK: protocol for ASSIST, a realist evaluation	2022	Jo Gibbs, Alison R Howarth, Jessica Sheringham, Louise J Jackson, Geoff Wong, Andrew Copas, David J Crundwell, Catherine H Mercer, Hamish Mohammed, Jonathan Ross, Ann K Sullivan, Elizabeth Murray, Fiona M Burns		mixed-methods	Assess the impact of these services on health disparities, access to care, and clinical and economic outcomes, and to identify factors that influence the implementation and sustainability of these services.			Findings from the economic evaluation provide important information on the cost-effectiveness and impact on health equity of the online mail self-sampling service. Findings from the implementation evaluation will inform future service provision [21]
16	Towards an equitable digital public health era: promoting equity through a health literacy perspective	2019	Natasha Azzopardi-Muscat, Kristine Sørensen		Literatur review	Reviews evidence of digital technologies impact on health equity.			Digital technologies are likely to increase health inequalities associated with increasing age, education low levels, and low socioeconomic status. Geographic inequalities may increase due to poor infrastructure, but may decrease if digital technologies can be widely used to

No.	Title	Year	Author(s), Year	Country	Stdy Design	Aims	Sample Size	Digital Tech Used	Outcome Measure
									compensate for shortages in health workers and health systems. Programs to improve digital health and literacy and monitor access, utilization, and impact across all population groups can help ensure that digital technologies act to reduce rather than reproduce or exacerbate existing health inequalities [22]
17	Digital health literacy and reproductive health in early adolescent girls	2024	Eka Rokhmiati Wahyu Purnamasari, Ronnell D. Dela Rosa		Scoping review	determine whether digital health literacy is able to answer reproductive health questions in adolescent girls			Digital reproductive health minimizes parents and caregivers who provide reproductive health information that is incorrect and even considered taboo. It is important for the Ministry of Health's policy to be able to provide official digital information on adolescent girls' reproductive health [23]

Table 1. literature review presents detailed synthesis of these studies, highlighting their research objectives, methodology, findings and implications. This comprehensive review provides basis for understanding the current landscape of digital health applications in reproductive health and identifies gaps and opportunities for future research and practice. Data Analysis used thematic approach to evaluate effectiveness, technology types, and challenges.

Digital Technologies Effectiveness in Increasing Reproductive Health Knowledge and Awareness.

Digital technologies have demonstrated their effectiveness in increasing public awareness of reproductive health. [9]conducted research in Nigeria showing that interactive voice-based digital tools successfully increase knowledge and use of contraceptives so that it can increase women's confidence to discuss family plans with health forces. research in Tanzania conducted by [8] showed that interactive mobile technology was able to increase use of antenatal services to 77.3% compared to 57.7% in the control group.

Digital technology has proven to be an effective tool in reproductive health counseling. Various studies have shown that use of health apps, telemedicine platforms, and social media can improve people's knowledge and awareness on reproductive health issues. For example, apps that provide information on contraception and sexual health, not only provide easy access for users, but also increase their understanding of options available[11] in their research showed that digital interventions are able to reach groups that were previously difficult to access, such as adolescents and women in remote areas. However, digital technology not only expands information reach but can also improve education quality received by community.

Digital Technology Role in Reaching Hard to Reach Groups.

In of reproductive health context, some of most widely used digital technologies types include health apps, social media, and telemedicine services. Health apps, for example, are often designed to provide relevant and easy-to-understand information, while social media serves as platform for sharing experiences and information. Telemedicine, on the other hand, offers remote consultations, allowing individuals to get medical advice without having to visit clinic in person. It is argued that the use of these technologies has increased access to health services and reduced social stigma related to reproductive health issues, thus encouraging more individuals to seek help when needed [12].

Digital technologies, such as telemedicine and mobile apps, play an important role in reaching vulnerable and hard-to-reach groups. The use of telemedicine for family planning can increase access in remote areas through the delivery of text messages that help with ongoing contraception [15, 24]. In India telemedicine implementation successfully increased access to reproductive and neonatal services in poor and rural areas as telemedicine reduced the cost of services and provided better privacy, which was key for women in the most deprived areas [7].

Obstacles in Digital Technology Implementation for Reproductive Health.

Although, digital technology utilization in reproductive health has many benefits, there are also obstacles such as the digital literacy low level among users, resulting in many individuals being unable to utilize technology optimally. In addition, privacy and data security issues are also of great concern, especially when sensitive health information is involved [7]noted that concerns can prevent people from using digital services.

However, there are also great opportunities in digital technology utilization. Increased community engagement in use of technology can help reduce stigma and raise awareness about reproductive health issues. With support from government agencies and non-government organizations, digital literacy can be improved, and access to technology can be expanded. Despite many benefits, there are obstacles to digital technology implementation.

Concerns related to privacy, lack of training, and uncertainty about digital services effectiveness were identified as key challenges [11]. Digital divide due to digital infrastructure and literacy lack that could worsen healthcare access for certain people groups. The specific guidance lack for digital health tools development is an obstacle to the technology implementation [17, 22].

Implementation Suggestions and Strategies.
To overcome these obstacles, some steps that can be taken are Increasing Digital Literacy: Through training and socialization of digital technology to empower health and society[11], Inclusive Approach: Developing user-driven service designs that consider vulnerable populations needs, such as adolescents and women in remote areas [4, 13]. Data Privacy and Security: Designing digital interventions with security and privacy aspects in mind early on [12]..

The Impact of Digital Technology on Health Equity.
Digital technologies can help improve equity in access to reproductive health. The importance of digital innovation in supporting equal access to sexual and reproductive health services, particularly for women. These technologies enable geographical reduction and social disparities through inclusive approaches. While digital technologies have the potential to increase inequality, initiatives such as digital literacy programs and access monitoring can ensure that these technologies become tools to reduce inequality[13, 22]

3 Telemedicine Utilization in Reproductive Health Services

Hernández et al. (2020) study found that electronic patient portals (EPPs) in assisted reproductive services (ART) were able to reduce waiting times. (EPP) in assisted reproductive services (ART) was able to reduce patient waiting time without affecting treatment outcomes without affecting treatment outcomes. In addition, telemedicine can provide safety, convenience and effectiveness in services such as contraception and medical abortion [24]. Chatbots as innovative intervention in providing reproductive health information. Chatbots enable anonymous interactions and responsive conversations, thus helping to improve understanding. However, challenges such as embarrassment and lack of confidential access to digital devices are obstacles that need to be overcome[20]

Digital health technology, is able to address the reproductive health needs of adolescent girls. The program helps reduce misinformation from parents or caregivers who may consider reproductive health topics taboo. Proposed robust framework for digital reproductive health tools development. This framework includes holistic approach that considers ethical aspects, technology, and user needs, and provides specific guidelines for creating more effective production health tools [17, 23]

Economic and Health Impact Evaluation of Digital.
Assesses digital services impact on health inequalities and cost-effectiveness. Results provide insights into how digital programs can be integrated into health policies by considering economic and equity factors.

In general, digital technology has shown great potential in improving reproductive health counseling, although challenges remain. By continuously evaluating effectiveness, identifying the right type of technology, and addressing existing constraints, we

can capitalize on the opportunities offered by digital technology to improve reproductive health in the community. Collaborative efforts between various stakeholders will be essential to achieve this goal.

Accessibility.
Digital technology has brought significant changes in improving reproductive health information and services accessibility, especially in previously isolated and hard-to-reach areas. Through health apps, telemedicine platforms, and social media campaigns, individuals living in areas with limited health infrastructure can now obtain accurate and relevant information on reproductive health. This is especially important for vulnerable groups, such as adolescents and women living in isolated areas, who often face stigma or knowledge lack about reproductive health issues. By utilizing digital technology, access to health services becomes more inclusive and equitable, thereby increasing people's awareness and knowledge about reproductive health. It also allows them to get the necessary support and services without having to travel far or face social barriers [11, 13]

Effectiveness.
Many studies have shown that digital interventions, such as mobile apps and online education platforms, can significantly improve knowledge and use of reproductive health services. For example, apps designed to provide information on contraception and sexual health have proven effective in improving users' understanding of available healthcare options. In addition, telemedicine has eased access to consultation services, allowing patients to obtain medical advice without having to visit clinic in person. This effectiveness is not only seen in increased knowledge, but also profound behavioral changes, where individuals are more likely to seek reproductive health services after receiving appropriate information through digital technology [14]). Thus, digital technology serves as powerful tool in promoting reproductive health and improving people's quality of life [25, 26]

Barriers.
While digital technology offers many benefits, there are a number of obstacles that need to be overcome to ensure its successful implementation in the context of reproductive health. One of the main obstacles is the low digital literacy among users, which may prevent them from optimally utilizing the technology. In addition, limited internet infrastructure in remote areas is often an obstacle in the accessibility of digital services [17]. Privacy and data security issues are also concern, especially when dealing with sensitive health information. Many individuals may feel reluctant to use digital services due to concerns about how their data will be used or protected. To overcome these obstacles, it is important for developers and service providers to provide adequate education and training, as well as ensure that the necessary infrastructure is available and accessible to all society sections[7, 13].

Opportunities.
Despite challenges, use of digital technology in reproductive health also opens up many new opportunities. One of the biggest opportunities is increased community engagement in use of digital technology, which can help reduce stigma and raise awareness about reproductive health issues. Innovation in development of more user-friendly applications and platforms can also make health services more accessible and more attractive to users, especially younger generation. In addition, support from government agencies and non-governmental organizations can play an important role in improving digital literacy and facilitating access to technology. By capitalizing on these opportunities, we can create more inclusive and supportive environment for individuals to obtain reproductive health information and services they need, thereby improving overall quality of life[14, 20, 22] .

4 Conclusion

This systematic literature review demonstrates that digital technologies—particularly mobile health applications, telemedicine, social media platforms, and interactive digital tools—play a significant role in improving accessibility, knowledge, and utilization of reproductive health services. These technologies are especially effective in reaching adolescents, women in remote areas, and other hard-to-reach populations.

However, challenges such as low digital literacy, limited infrastructure, and concerns regarding data privacy and information security remain critical barriers. Addressing these challenges is essential to maximize the potential of digital reproductive health interventions.

Implications. The findings of this study have important implications for practice, policy, and future research. Health practitioners should integrate digital tools into reproductive health services while ensuring user-friendly and culturally appropriate designs. Policymakers are encouraged to strengthen regulatory frameworks that support ethical implementation, data protection, and equitable access to digital health services. Future research should focus on evaluating long-term effectiveness, user engagement, and equity impacts of digital reproductive health interventions across diverse populations.

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