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# Digital Technology in Midwifery Education and Training: Advancing Competences and Clinical Practices

**Sri Nurhayati[1], Stevanus Bimantoro[1], Md. Hafizi Ahsan[2]**
[1]Community Education Postgraduate Program, IKIP Siliwangi, Indonesia
[2]Labuan Faculty of International Finance, University Malaysia Sabah, Malaysia
✉ Author Corresponding: srinurhayati@ikipsiliwangi.ac.id

**ABSTRACT**

Microteaching practices and educational field experiences have long been part of the professional training of teachers. Both are requirements that must be taken by prospective teachers to become skilled and professional teachers. This study aims to describe the effect of microteaching practices and educational field experiences on the professionalism of prospective teachers. A quantitative approach with the correlational method was used to analyze the data obtained from 178 teacher candidates who took part in the practice of microteaching and carried out 6 months of educational field experience. The instrument used to collect data is a questionnaire. The results of the data analysis show that the microteaching practice and educational field experiences affect the professionalism of prospective teachers. However, educational field experiences have a more dominant influence than the practice of microteaching. Educational field experience directly shapes the character of prospective teachers to become professional educators because they are faced with real experience in the field. Meanwhile, the practice of microteaching occurs in a limited space so the teaching experience gained by prospective teachers is also limited. More effective management of microteaching practices needs to be a concern because through microteaching prospective teachers theoretically and practically gain knowledge about basic teaching skills and skills in compiling learning tools. The knowledge gained during the practice of microteaching is used by prospective teachers while carrying out educational field experiences.

**Keywords:** Microteaching Practice; Educational Field Experiences; Professional Performance; Prospective Teachers.

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## 1. INTRODUCTION

The integration of digital technology has revolutionized various aspects of healthcare, transforming traditional practices and introducing innovative solutions to enhance service delivery and professional development. Among the many branches of healthcare, midwifery has witnessed notable advancements, as digital tools become increasingly essential in both education and clinical operations. These technologies not only streamline administrative and clinical workflows but also empower midwives with the knowledge and resources needed to provide better care to mothers and infants. Despite these transformative changes, the adoption and efficacy of digital technologies in midwifery education and practice remain underexplored,

particularly in developing countries where infrastructural and systemic challenges persist (Iis et al., 2025; Milyane et al., 2023; Nurhayati, 2024; Nurhayati & Musa, 2025; Sulkipani et al., 2024).

In Indonesia, midwives serve as primary maternal healthcare providers, particularly in rural and urban community settings. The increasing utilization of digital tools in midwifery education and clinical practice presents both opportunities and challenges in ensuring high-quality maternal and neonatal care. While digital, social, and mobile technologies (DSMTs) have been widely recognized for their ability to enhance clinical decision-making and self-directed learning (DeLeo & Geraghty, 2018; Nurhayati, Fitri, et al., 2024; Susanti & Nurhayati, 2024; Tiarawati et al., 2023), their effective implementation in midwifery remains uneven and inconsistent. Studies have shown that smartphone applications and telemedicine platforms improve midwife-patient interactions, yet accessibility issues and digital literacy gaps continue to hinder optimal use (Brown Wilson et al., 2020; Musa et al., 2024, 2025; Nurhayati & Musa, 2020).

The specific role of digital technology in midwifery clinics extends beyond education, encompassing patient monitoring, clinical documentation, and community outreach efforts. For example, electronic medical records, geolocation-based patient tracking, and online consultation platforms have contributed to enhanced operational efficiency and maternal health service accessibility (Awad et al., 2021; Lee et al., 2023). However, midwives often face unique challenges, including restrictive regulations, a lack of structured digital training, and inadequate access to technology infrastructure, limiting the full realization of digital transformation (Musa et al., 2025; Nurhayati & Handayani, 2025; Nurhayati & Susanto, 2024; Setiadi et al., 2023). The COVID-19 pandemic accelerated the adoption of digital tools in midwifery, as virtual prenatal and postnatal consultations became critical for maintaining maternal health services amid movement restrictions (Vivilaki et al., 2021). This rapid transition highlighted the need for midwives to develop digital competencies, particularly in managing health misinformation and adapting to telehealth services in low-resource settings. The shift to digital also emphasized the importance of structured digital training programs, ensuring midwives are equipped with the necessary skills to integrate technology into daily clinical practice.

Existing literature has explored various theoretical models for technology adoption in healthcare. The Technology Acceptance Model (TAM) has been widely used to assess midwives' willingness to adopt digital tools, emphasizing factors such as perceived ease of use and usefulness (Lau & Greer, 2022). Additionally, hybrid models that integrate TAM with the Diffusion of Innovation Theory provide a more comprehensive framework for evaluating midwifery clinics' readiness for technology adoption (Cho, 2023). However, while previous studies have explored these models in general healthcare and nursing education, their application in midwifery remains limited, necessitating further investigation into how midwives specifically engage with digital tools in real-world settings.

In addressing these gaps, existing literature provides valuable insights into the theoretical frameworks and practical approaches for technology adoption in healthcare. The Technology Acceptance Model (TAM), for example, has been widely used to assess the factors influencing the acceptance and utilization of e-learning and other digital tools in medical education (Lau & Greer, 2022). Additionally, hybrid frameworks that combine TAM with other theories, such as the diffusion of innovation, have been developed to evaluate the impact of safety technology use in healthcare (Cho, 2023). These models emphasize the importance of organizational drivers, user involvement, and the consideration of contextual factors in ensuring successful implementation. However, the specific application of these frameworks in midwifery education and practice

remains limited, necessitating further exploration to address the unique challenges and opportunities in this field.

Research on digital technology in midwifery has primarily focused on its role in improving communication, access, and quality of care. For instance, studies have shown that digital tools enable midwives to connect with patients more effectively and provide timely interventions (Wakelin et al., 2022). In Jordan, the use of digital technology in family planning services has been perceived as beneficial by both midwives and clients, empowering women in decision-making and enhancing the overall patient experience (Yousef et al., 2020). However, significant disparities remain in the adoption of digital tools across different regions, with low- and middle-income countries facing acute shortages of trained midwives and technological resources. Addressing these disparities requires sustained investments in workforce development and digital infrastructure, as well as tailored strategies to meet the unique needs of diverse healthcare contexts (Nove et al., 2021).

To address this gap, this study employs a descriptive qualitative approach, which is particularly well-suited for examining real-life experiences and contextual challenges in midwifery clinics. Bandung was selected as the research site due to its unique positioning as an urban center with growing digital healthcare initiatives, yet it also faces persistent infrastructural challenges. As a city with a mix of technologically advanced healthcare institutions and midwifery clinics operating in resource-limited settings, Bandung provides a representative case for examining digital adoption in diverse midwifery environments. Studying this setting allows for a nuanced understanding of both enablers and barriers to digital transformation, offering insights that can be extrapolated to other urban and semi-urban regions in Indonesia and similar developing countries..

While previous studies have highlighted the general benefits of digital technology in maternal healthcare, this research uniquely contributes by focusing specifically on midwifery clinics in Bandung, offering localized insights into the factors influencing digital integration in both educational and clinical settings. By identifying best practices, key challenges, and actionable strategies, this study informs policy development, midwifery training programs, and healthcare regulations, ensuring that digital transformation aligns with the practical needs of midwives and maternal health services. Moreover, the findings hold broader implications for scaling up digital innovations in similar resource-limited contexts, supporting the global discourse on healthcare digitization in maternal and neonatal care. This study, therefore, seeks to bridge the gap between technology adoption theory and its practical application in midwifery, offering recommendations that strengthen midwife education, improve patient care, and optimize clinical operations. By addressing both technical and human-centric challenges, this research paves the way for more effective, sustainable, and inclusive digital healthcare solutions for midwives in Indonesia and beyond.

## 2. METHODS

This study employs a qualitative descriptive approach to explore the integration of digital technologies within midwifery education and clinical practices. A qualitative descriptive design is particularly well-suited for capturing nuanced user experiences and contextual factors influencing technological adoption, allowing for an in-depth understanding of real-world implementation (Iswahyudi et al., 2023; Nurhayati, Kurnianta, et al., 2024; Sugiyono, 2019). This methodology aligns with the study's objective of identifying facilitators and barriers to digital

technology use in midwifery clinics while ensuring a flexible and grounded approach to data collection and analysis.

Participants were purposively selected to ensure the inclusion of individuals with direct experience in adopting digital technologies in midwifery practice. The study involved ten midwifery clinic owners and practitioners in Bandung, Indonesia, chosen based on their professional expertise, years of experience, and active use of digital tools in their clinical settings. To ensure a balanced perspective, participants were selected from various clinic types, including both urban and peri-urban settings, allowing for a comprehensive understanding of how technological integration varies across different operational environments. The inclusion of ten participants was determined to be sufficient for achieving data saturation, where additional data collection no longer yielded new insights, ensuring both depth and relevance in capturing the complexities of digital adoption.

Data collection was conducted through semi-structured interviews, observations, and document analysis, allowing for a triangulated approach to enhance research credibility. Semi-structured interviews served as the primary method for exploring participant perspectives, enabling both flexibility and consistency across core research themes. Interviews were conducted in a manner that fostered open and reflective dialogue, ensuring that participants could express their experiences with digital tools in midwifery education and practice. The interviews focused on key areas, including the types of technologies used, their impact on clinical workflows and patient engagement, as well as the challenges encountered during adoption. To complement interview findings, observational techniques were employed to examine the direct interaction between midwives and digital tools in real-time clinical settings. These observations provided a deeper understanding of how digital technologies function within midwifery workflows, highlighting both their benefits and operational constraints. Additionally, document analysis was conducted to review clinic protocols, training materials, and patient management records, offering contextual depth to the findings by comparing institutional guidelines with actual practice.

Data analysis was conducted using thematic analysis, ensuring a systematic approach in identifying patterns and extracting key themes related to digital technology adoption. The analysis followed an iterative process beginning with open coding, where raw data were examined to identify initial concepts and categories. This was followed by axial coding, where relationships among these categories were refined to develop broader thematic structures. The final stage involved theme refinement, ensuring that the emerging themes aligned with the study's research objectives while maintaining coherence and analytical depth. To enhance reliability, coding was conducted manually and verified through multiple rounds of review to ensure consistency. Thematic saturation was confirmed through repeated patterns across multiple data sources, ensuring that all significant findings were adequately captured and substantiated.

Ensuring methodological rigor was a critical aspect of this study. Multiple validation strategies were implemented to strengthen research trustworthiness. Triangulation was achieved through the convergence of data from interviews, observations, and document analysis, reinforcing the robustness of the findings. Member checking was employed to enhance interpretative accuracy, where preliminary findings were presented to participants for feedback, ensuring alignment with their lived experiences. This process not only mitigated researcher bias but also improved the authenticity of data interpretation. Additionally, peer debriefing was conducted through discussions with qualitative research experts, allowing for an external review of analytical processes and thematic categorizations. This study's methodological approach

ensures a comprehensive exploration of the integration of digital technologies in midwifery education and practice, providing valuable insights into both its transformative potential and the structural challenges that must be addressed. By grounding the findings in real-world experiences and employing systematic qualitative methods, this research contributes to the growing discourse on healthcare digitization within the context of midwifery in Indonesia.

## 3. RESULT AND DISCUSSION

The study revealed significant progress in adopting digital technology within midwifery training and education in Bandung, Indonesia. Digital tools have transformed midwifery education by improving access to learning resources, fostering peer collaboration, and enhancing clinical decision-making. However, midwives continue to face challenges in technological adoption, particularly in infrastructure, digital literacy, and financial constraints. This section examines the types of digital tools adopted, their educational impact, advancements in competencies, and the challenges encountered, followed by a discussion of strategies to improve adoption and integration. These results align with and extend previous research on digital transformation in maternal healthcare by offering context-specific insights into the experiences of midwives in resource-limited settings.

### 3.1 Adoption of Digital Technologies in Midwifery Training and Education

The adoption of digital technology in midwifery training and operational clinic began as early as 2008, with basic tools such as social media platforms, and has progressed to more advanced systems in recent years. Social media platforms such as Instagram, Facebook, and WhatsApp were highlighted as critical tools for professional education and communication. These platforms facilitated peer engagement and enabled midwives to access educational content and share knowledge effectively. Respondents emphasized that these tools have enhanced their ability to access real-time information and collaborate effectively. One midwife explained: "WhatsApp groups have become our lifeline for professional learning. Whenever there's a challenging case, we consult senior midwives immediately, ensuring we make the best decisions while learning from real cases." Another participant stated: "Access to clinical guidelines in real-time has not only improved our confidence but also reinforced our learning in handling complex scenarios."

Alongside social media, clinic management systems such as e-kohort have emerged as indispensable tools that integrate educational resources with patient data management. These systems enhance experiential learning by providing real-time access to patient histories, treatment protocols, and clinical guidelines. Additionally, geolocation services such as Google Maps support location-based case studies, improving emergency response times and optimizing patient visits. The Table 1 below summarizes the key digital tools used in midwifery education.

**Table 1.** Commonly Used Digital Tools in Education

| Tool | Purpose |
|---|---|
| Google Maps | Supporting location-based case studies |
| WhatsApp | Peer learning and collaboration |
| Instagram, Facebook | Dissemination of educational resources |
| e-kohort | Integration of educational tools with patient data |

This Table 1 presents the key digital tools utilized in midwifery education and clinical practice in Bandung. The tools are categorized based on their primary purpose, highlighting how each contributes to professional learning and patient care. Google Maps supports location-based case

studies, enabling midwives to analyze geographical factors in maternal health. WhatsApp facilitates peer learning and professional collaboration, providing real-time case discussions and consultations. Instagram and Facebook serve as platforms for disseminating educational resources, enhancing midwifery awareness and outreach. E-kohort integrates educational tools with patient data management, offering structured documentation and access to clinical guidelines.

Digital technologies also have profoundly transformed midwifery training, providing real-time access to clinical protocols, interactive modules, and patient data for educational purposes. These advancements have strengthened midwives' competencies in theoretical learning, decision-making, and practical application. Platforms like WhatsApp facilitate peer discussions, fostering collaborative learning and immediate feedback during professional development activities. Interactive tools, such as simulations and self-paced modules, provide platforms for midwives to practice and refine skills in controlled environments. These tools are particularly beneficial for midwives in remote areas who face barriers to attending in-person training sessions. Furthermore, social media platforms have become pivotal for sharing educational materials and promoting awareness among midwives and patients alike. Respondents highlighted that real-time access to clinical protocols enhances their ability to apply theoretical knowledge to real-life scenarios, thus improving patient care. One participant noted: “We use WhatsApp groups to discuss real-life scenarios, which helps us bridge the gap between theory and practice.” Another added: “Online learning resources, including videos and e-books, have made it easier for us to stay updated on the latest practices, especially when in-person workshops are unavailable.”

Digital tools have also contributed to skill enhancement by supporting reflective practices. Discussing complex cases in digital forums has enabled midwives to refine their clinical judgment and gain insights from their peers’ experiences. This collaborative learning approach fosters both professional growth and emotional resilience. Additionally, midwives reported that tools like e-learning platforms and virtual reality simulations allowed for innovative methods of engaging with educational content. Virtual reality environments simulate high-stress clinical scenarios, enabling midwives to practice interventions repeatedly in a safe, controlled setting. One respondent described these technologies as “a breakthrough in hands-on training without the need for physical patient interaction,” as shown in Table 2.

**Table 2.** Educational Benefits of Digital Tools

| Feature | Impact on Training |
|---|---|
| Real-time protocol access | Enhanced clinical understanding |
| Peer collaboration platforms | Immediate consultations and discussions |
| Self-directed learning modules | Flexible access to training materials |
| Interactive simulations | Practical skill enhancement |
| Virtual reality tools | Immersive experiential learning |

Table 2, summarizes the key educational benefits of digital tools in midwifery training. Real-time access to clinical protocols improves midwives’ understanding of best practices, ensuring accurate and up-to-date decision-making. Peer collaboration platforms, such as WhatsApp and online discussion forums, provide immediate consultations and knowledge sharing, fostering continuous professional development. Self-directed learning modules offer flexible access to training materials, allowing midwives to study at their own pace. Interactive simulations, including digital case scenarios and virtual training tools, enhance hands-on skills development.

Virtual reality tools provide immersive experiential learning, allowing midwives to practice high-risk clinical interventions in a controlled environment before applying them in real-life settings.

Digital technologies have had a transformative impact on midwifery education by integrating theoretical learning with practical application. Respondents highlighted several benefits of using digital tools, including improved access to clinical guidelines, enhanced decision-making, and opportunities for reflective practice. Platforms like WhatsApp and e-kohort facilitate real-time discussions and case evaluations among midwives, fostering a collaborative approach to professional learning. This aligns with the findings of O'Connor et al. (2017), who emphasized the importance of social media in fostering a sense of community in healthcare education. Additionally, virtual reality simulations and interactive e-learning modules have enabled midwives to practice interventions in controlled environments, thereby enhancing clinical confidence and preparedness (Iskandar et al., 2023; Mukhalalati & Taylor, 2019; Sulkipani et al., 2024). Self-directed learning modules have also proven effective in promoting autonomous study and skill refinement. Structured self-regulation training in online learning environments significantly improves engagement and learning outcomes (Miao & Ma, 2022; Susanti & Nurhayati, 2024). Respondents noted that such modules, combined with digital simulations, provide invaluable opportunities to develop critical thinking and diagnostic skills. E-learning platforms have been widely adopted to support self-paced learning and blended education models. These platforms combine online content delivery with face-to-face interaction, catering to diverse learning preferences (Erlandsson et al., 2019; Tiarawati et al., 2023). For instance, e-learning programs addressing high-risk scenarios, such as postpartum hemorrhage management, have been shown to improve midwives' critical decision-making skills (Giena et al., 2022). Mobile applications have emerged as pivotal tools in clinical settings, providing midwives with instant access to clinical guidelines, educational materials, and patient data. Studies such as those by Muhindo et al. (2021) and Kalu & Chukwurah (2022) highlight the role of mobile applications in bridging the gap between theoretical knowledge and practical application, particularly in low-resource settings.

Digital tools have played a crucial role in reducing resource disparities in midwifery education, particularly in underserved areas. Online learning platforms and telecommunication tools have significantly improved access to training resources for midwives in remote regions. For example, Erlandsson et al. (2019) described a web-based master's program in Bangladesh that enhanced midwifery educators' capacity, illustrating the potential of digital tools to address resource inequities. Furthermore, collaborative digital environments promote knowledge sharing and mentorship among midwifery educators and students. Muxamuud (2024) reported that digital mentorship programs effectively enhance midwifery education by bridging geographic and resource divides. Respondents emphasized that access to standardized training materials through digital platforms ensures equitable learning opportunities for midwives in both urban and rural settings.

### 3.2 Advancing Competencies in Clinical Decision-Making

The integration of digital technologies into midwifery education has effectively advanced midwives' competencies, particularly in clinical decision-making. Real-world simulations and virtual learning environments have allowed midwives to practice handling complex scenarios in a risk-free setting. These tools have provided opportunities to enhance critical thinking, diagnostic skills, and response strategies for high-risk cases. Digital technologies also enable continuous learning by offering access to updated guidelines, protocols, and research findings.

This ensures that midwives remain current with advancements in their field, which is essential for evidence-based practice. One participant shared: "Having instant access to updated protocols gives me confidence in applying the most recent best practices in my clinical decisions." Reflective practices facilitated by digital tools, such as discussing case outcomes and treatment strategies, have further reinforced learning. These practices enable midwives to analyze their decisions critically, identify areas for improvement, and share insights with peers. Peer-driven case studies shared through digital forums were described as "empowering," helping less experienced midwives learn from real-world clinical experiences. Midwives also highlighted the ability of digital platforms to standardize training materials across clinics. Tools like online repositories and shared databases ensure that all trainees have equitable access to high-quality resources, regardless of geographical constraints.

Additionally, digital tools empower midwives by enhancing their confidence in clinical decision-making and fostering a culture of continuous professional development. Respondents described how platforms like WhatsApp enabled them to learn from peers' experiences, further strengthening their practice. These findings align with those of Alsweiler et al. (2023), who emphasized the role of digital tools in supporting compliance with national healthcare guidelines. Digital platforms have enhanced collaboration among midwives, fostering a more connected healthcare environment. Tools such as WhatsApp and e-kohort have become vital for interprofessional communication, allowing midwives to consult with peers and senior practitioners efficiently. Respondents noted that these platforms facilitated the timely sharing of case updates and educational materials, enabling a collaborative approach to patient care. Studies support this observation, with Misago et al. (2023) highlighting the role of community-based digital interventions in improving collaboration among healthcare workers. Similarly, Adeyemo et al. (2022) emphasized that validated tools promoting interprofessional education enhance teamwork and patient outcomes. Respondents also described improved job satisfaction and professional development through collaborative practices enabled by digital platforms, echoing findings by (Bergen et al., 2019).

### 3.3 Challenges in Digital Technology Adoption

Despite their advantages, the implementation of digital technologies in midwifery education is not without challenges. Connectivity issues, system errors, and time-intensive content management for social media platforms were frequently cited. Older staff members often faced difficulties adapting to these tools due to digital literacy gaps, underscoring the need for continuous training programs. One participant remarked: "It's not just about learning the software but also maintaining the confidence to use it consistently and effectively." Another explained: "Creating engaging content for social media is resource-intensive, but it is essential for staying connected with our learners and patients." Participants also noted limited institutional support for integrating advanced digital tools, such as telemedicine and artificial intelligence systems, into training programs. Financial constraints further restricted some clinics from adopting sophisticated technologies. To address these challenges, the study highlights the necessity for institutional support, reliable infrastructure, and targeted training programs to improve digital proficiency. The adoption of learning management systems and virtual training tools was also suggested as a long-term solution to streamline content delivery and educational outcomes.

Despite their advantages, the adoption of digital technologies in midwifery education faces significant challenges. Respondents identified three primary barriers: digital literacy, financial

constraints, and connectivity issues. (1) Digital Literacy: Many midwives reported varying levels of proficiency in using digital tools, which affects their ability to integrate these technologies effectively into practice. Morris et al. (2023) emphasize that inadequate digital literacy among healthcare workers impedes the adoption of digital health technologies, a sentiment echoed by several respondents. High workloads further limit opportunities for midwives to develop digital competencies (Bäckström et al., 2023); (2) Financial Constraints: Limited funding for training and technology acquisition was another recurring theme. Respondents noted that financial barriers hindered the procurement of advanced tools, such as virtual reality systems and comprehensive e-learning platforms. Zayyad & Toycan (2018) highlighted similar constraints in developing countries, where inadequate infrastructure restricts the adoption of e-health solutions; and (3) Connectivity Issues: Inconsistent internet access, particularly in rural areas, remains a significant obstacle. As Maha (2024) observed, poor connectivity can disrupt the use of mobile health applications and telemedicine services, essential components of modern midwifery practice. Respondents in remote settings reported difficulties accessing real-time resources and participating in online learning sessions. To address these challenges, midwives proposed several solutions, including structured digital literacy training, financial support mechanisms, and infrastructure improvements. Targeted training programs for senior midwives can bridge generational gaps in digital literacy, ensuring that all practitioners benefit from technology-enhanced learning. Midwives suggested peer mentoring programs, where experienced digital users train colleagues in utilizing online tools effectively. Financial constraints could be mitigated through partnerships with governmental and non-governmental organizations, enabling clinics to secure grants for technology investments. Additionally, subscription-based learning management systems offer cost-effective alternatives for structured digital education. Similar funding models have been successfully implemented in other low-resource healthcare settings, demonstrating their potential for midwifery education (Erlandsson et al., 2019). Infrastructure improvements, particularly in internet connectivity, are crucial for maximizing the impact of digital tools in midwifery. Investments in mobile data packages and satellite-based internet services for remote areas would ensure uninterrupted access to educational resources. Telecommunication partnerships and government-backed digital initiatives can further facilitate access to reliable online learning platforms, addressing disparities in training opportunities between urban and rural clinics.

this study contributes to the growing body of literature on peer-driven digital learning and collaborative knowledge-sharing among midwives. Previous studies Alsweiler (2023); O'Connor et al. (2017) have highlighted the importance of social media networks in fostering a sense of professional community among healthcare workers. The present study builds on these insights by demonstrating that WhatsApp, Facebook, and other social platforms function not only as communication tools but also as digital mentorship environments where midwives consult on clinical cases, exchange best practices, and refine decision-making skills. The findings further align with Mukhalalati & Taylor (2019), who identified digital forums as effective platforms for reflective practice and interprofessional learning. This study reinforces their conclusions while expanding the scope to include midwifery-specific digital collaborations, particularly in developing countries where formal mentorship programs may be limited.

A critical contribution of this research is its identification of barriers and solutions for digital integration in midwifery education. Digital literacy gaps, financial constraints, and connectivity challenges remain significant obstacles to widespread digital adoption, reflecting broader trends observed in other maternal health education studies (Morris et al., 2023; Zayyad & Toycan, 2018).

However, this study provides new insights by proposing concrete interventions, including peer-led digital literacy programs, targeted financial support, and telecommunication infrastructure investments, to enhance the accessibility and effectiveness of digital education for midwives. These findings align with Maha (2024), who observed that limited broadband infrastructure hinders digital transformation in healthcare services, particularly in maternal health. By focusing specifically on midwifery clinics and their unique operational challenges, this study contributes a context-specific perspective to the global discourse on digital healthcare adoption.

In addition to reinforcing existing literature, this research contributes new insights into how midwifery-specific digital education strategies can be optimized. While Erlandsson et al. (2019) demonstrated the feasibility of **l**arge-scale web-based learning programs, this study highlights how small, community-based clinics can implement digital training using accessible, cost-effective tools such as WhatsApp, e-learning repositories, and case-based mentorship groups. These findings provide practical recommendations for midwifery educators, policymakers, and healthcare institutions, ensuring that digital integration aligns with the specific needs of midwives working in diverse clinical settings. By strengthening the link between theoretical frameworks of digital learning and real-world midwifery education practices, this study underscores the importance of context-sensitive digital strategies.

One critical implication highlighted in the study is the ability of digital tools to democratize access to quality education. By bridging geographic and resource divides, these tools ensure that midwives in remote or under-resourced areas receive the same training opportunities as their urban counterparts. This equity-focused approach strengthens the overall competency of the workforce, ultimately benefiting maternal and child health outcomes. However, this study emphasizes the importance of human-centered approaches that combine technical innovations with the development of soft skills such as adaptability and emotional intelligence. Training institutions must prioritize creating robust support systems to facilitate the adoption and effective utilization of digital tools. In essence, digital technologies have redefined midwifery education, bridging the gap between theory and practice while advancing competencies in clinical decision-making. Continued investments in training, infrastructure, and advanced learning tools will be critical to fully realizing the potential of these technologies. These findings offer valuable insights for educators, policymakers, and training institutions aiming to optimize digital learning in midwifery education.

## 4. CONCLUSION AND SUGGESTIONS

This study contributes to both theory and practice by expanding the understanding of digital technology adoption in midwifery education and clinical settings. It reinforces digital learning and healthcare innovation models by demonstrating how small-scale midwifery clinics integrate cost-effective digital tools to enhance professional development, decision-making, and patient care. Unlike previous research focused on hospital-based maternal healthcare, this study provides localized insights into digital solutions tailored to midwifery clinics in resource-limited settings. By highlighting how midwives use social media for peer learning, professional networking, and real-time clinical consultations, this study offers a new perspective on digital healthcare transformation in decentralized maternal health services. Despite the benefits, barriers such as digital literacy gaps, unreliable connectivity, and financial constraints hinder seamless adoption. Structured digital literacy training should be incorporated into midwifery education programs, ensuring competency in technology use before workforce entry. Governments should provide subsidized internet access and telehealth platforms, while public-private partnerships can offer

grants to support clinics in acquiring digital tools. Investing in mobile-friendly e-learning platforms can further bridge accessibility gaps for midwives in remote areas. Policymakers should establish a clear regulatory framework to standardize digital records and telemedicine in midwifery clinics. Incentives for technology adoption, including tax benefits and funding for digital infrastructure, can accelerate digital transformation. Future research should focus on scalable AI-driven maternal health monitoring and assess the long-term impact of digital interventions on midwifery education and patient outcomes. Strengthening digital adoption is essential for improving midwifery services and enhancing maternal and neonatal health..

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