MEDISAINS
Jurnal Ilmiah Ilmu - Ilmu Kesehatan

Original Article

Designing a stakeholder-informed digital learning model integrating virtual reality and e-learning for complementary therapy-based postpartum preeclampsia education

Susilo Rini [1]✉, Arif Setia Sandi [2], Atun Raudotul Ma'rifah [3], Raden Ayu Aminah Maya [4]

[1] *Midwifery Study Program, Faculty of Health, Universitas Harapan Bangsa, Banyumas, Central Java, Indonesia*
[2] *Department of Informatics, Faculty of Science and Technology, Universitas Harapan Bangsa, Banyumas, Central Java, Indonesia*
[3] *Department of Nursing, Faculty of Health, Universitas Harapan Bangsa, Banyumas, Central Java, Indonesia*
[4] *Department of Health Sciences, Applied Sciences, Lincoln University College, Petaling Jaya, Selangor, Malaysia*

ARTICLE INFORMATION

Received: January 08, 2026
Revised: March 21, 2026
Accepted: April 13, 2026

KEYWORDS

Preeclampsia; Virtual Reality; E-Learning; Complementary Therapies; Health Promotion; Capacity Building; Digital Health Education

CORRESPONDENCE

Phone: +62 821-3667-6069

E-mail: susilorini@uhb.ac.id

A B S T R A C T

Background: Postpartum preeclampsia remains a significant contributor to maternal morbidity and mortality in Indonesia. Midwives, as frontline maternal health providers, are expected to deliver holistic care; however, structured learning models integrating complementary therapies within digital education platforms remain limited. Although virtual reality (VR) and e-learning have been widely applied in healthcare education, their context-sensitive integration into postpartum preeclampsia management training has not been sufficiently explored.

Objective: This study aimed to explore stakeholder perspectives and to design a stakeholder-informed conceptual digital learning model integrating complementary therapies into VR- and e-learning-based midwifery education.

Methods: This qualitative exploratory study involved 31 participants, including practicing midwives, educational practitioners, policymakers, and clinical and technology experts in Banyumas Regency, Indonesia. Data were collected through focus group discussions and semi-structured in-depth interviews and analyzed using thematic analysis to identify stakeholder perspectives, contextual challenges, and design requirements informing the development of a conceptual digital learning model.

Results: Four interconnected themes were identified: 1) fragmented integration of complementary care; 2) the need for experiential and clinically contextualized learning; 3) digital readiness and structural constraints; and 4) the importance of institutional support and policy alignment. These findings informed the development of a stakeholder-informed conceptual framework consisting of structured curriculum modules, a nine-scene VR storyboard simulating clinical decision-making, and a mobile-accessible Learning Management System integrating complementary therapies such as lavender aromatherapy, warm foot bath, and slow-stroke back massage.

Conclusion: This study provides a contextually grounded digital learning framework for integrating VR, e-learning, and complementary therapies in postpartum preeclampsia education. The proposed model offers a foundation for future pilot implementation and effectiveness studies to evaluate its impact on midwifery competencies and clinical practice.

INTRODUCTION

Maternal mortality remains a significant global public health challenge, especially in low- and middle-income countries, where access to timely and effective maternal care is often limited.[1] Hypertensive disorders during pregnancy, including preeclampsia, contribute substantially to maternal morbidity and mortality, accounting for approximately 14% of maternal deaths worldwide.[2] In Indonesia, maternal mortality continues to be a concern, with the rate reaching 183–189 deaths per 100,000 live births in 2022-2023, and preeclampsia contributing to approximately 25–30% of these deaths.[3] More specifically, national and hospital-based reports indicate that a significant proportion of maternal deaths related to hypertensive disorders occur in the postpartum period, with postpartum preeclampsia and

https://doi.org/10.30595/10.30595/medisains.v24i1.30532

eclampsia contributing to delayed maternal mortality due to late detection and inadequate monitoring after delivery.

Postpartum preeclampsia is frequently underrecognized despite its potential to rapidly progress into severe complications if not managed properly.[4,5] Evidence from Indonesia indicates that its management remains suboptimal, characterized by delayed detection, limited monitoring, and insufficient integration of holistic care approaches.[6,7] These gaps highlight the need to strengthen healthcare service capacity, particularly at the primary care level, where early detection and management are crucial.

Midwives, as frontline maternal healthcare providers, play a critical role in the early identification, management, and education of patients.[8] However, midwifery education and training models in Indonesia primarily focus on competency-based curricula, lecture-based continuing education, and short-term clinical training that emphasize pharmacological management and emergency care, with limited focus on integrated, holistic care, especially in the postpartum period. Structured learning opportunities addressing comprehensive postpartum preeclampsia management—including complementary therapies—are insufficient.[9] Although interventions such as lavender aromatherapy, warm foot baths, and slow stroke back massage have demonstrated potential benefits in reducing the incidence of preeclampsia, their integration into formal educational systems has not been systematically established.

Advances in digital technology have transformed health professional education. Virtual reality (VR) supports immersive simulations and experiential learning, while e-learning platforms offer flexible, scalable access to knowledge.[10-12] From a health promotion perspective, these approaches can strengthen capacity building and knowledge translation among healthcare providers. However, their implementation is influenced by contextual factors such as digital literacy, infrastructure readiness, and institutional support.

Existing studies on complementary care in postpartum settings have primarily focused on clinical outcomes or isolated training interventions, with limited attention to integrated, sustainable educational designs.[13,14] Furthermore, little is known about how stakeholders—including midwives, educators, and policymakers—inform the integration of complementary therapies and digital learning technologies into structured education models. Without stakeholder input, educational innovations risk being misaligned with real-world needs.

These limitations highlight a gap at both the conceptual and implementation levels in developing adaptive, context-sensitive, and needs-based educational models. Therefore, this study aimed to inform the design of a stakeholder-informed digital learning model integrating VR, e-learning, and complementary therapies. Specifically, this study sought to: 1) explore stakeholder perspectives; 2) identify contextual barriers and enabling factors influencing digital learning adoption; and 3) develop a conceptual model integrating VR-based simulations, e-learning modules, and complementary therapy-based content.

METHOD

Study Design

This study employed a qualitative exploratory design aligned with the needs assessment and requirement elicitation phases within a user-centered design framework.[15] This approach was selected because it enables the exploration of stakeholder perspectives, contextual needs, and implementation considerations, providing richer insights for the design of a stakeholder-informed conceptual digital learning model, compared to quantitative methods. Rather than evaluating intervention effectiveness, the study aimed to generate contextually grounded insights to guide the integration of VR, e-learning, and complementary therapies in postpartum preeclampsia education.

Setting and Participants

The study was conducted in collaboration with the Indonesian Midwives Association Banyumas Branch and the Banyumas Regency Health Office. These institutions facilitated participant recruitment and supported the contextual exploration of educational and practice-related challenges in postpartum preeclampsia management. Data were collected between January and July 2025 through focus group discussions (FGDs) and in-depth interviews in Banyumas Regency, Central Java, Indonesia. The region comprises 40 primary health centers and more than 700 practicing midwives, providing a relevant and information-rich context for exploring digital education needs in maternal healthcare.

Participants were recruited using purposive sampling to ensure representation across diverse stakeholder perspectives, including clinical (midwives), educational (training practitioners), managerial (policymakers), and technological (multimedia and educational technology experts) domains. A total of 31 participants were included and categorized into two main groups: 1) Practicing midwives (n = 15), comprising five midwives with direct experience managing postpartum preeclampsia cases and ten midwives from both urban and rural primary health centers with a minimum of five years of clinical experience; and 2) Multidisciplinary stakeholders and experts (n = 16), including health and technology education practitioners (n = 7), policymakers and professional organization representatives (n = 5), and subject-matter experts (n = 4), consisting of a fetomaternal specialist, a complementary midwifery expert, a multimedia design expert, and an educational technology expert. This sampling strategy enabled triangulation across professional roles and facilitated a comprehensive understanding of contextual, systemic, and implementation-related factors influencing digital learning integration.[16]

Data Collection

Data collection was conducted in two sequential phases. First, FGDs were conducted with practicing midwives and education practitioners to explore experiences in postpartum preeclampsia management, perceived training gaps, attitudes toward complementary therapies, and expectations regarding digital learning modalities. Each FGD lasted approximately 120 minutes and was guided by a semi-structured discussion protocol. Visual prompts, including preliminary VR storyboard sketches and learning management system (LMS) interface drafts, were used to facilitate discussion on feasibility, usability, and contextual relevance.

Second, semi-structured in-depth interviews were conducted with policymakers and subject-matter experts to explore institutional readiness, professional considerations, patient safety, and the feasibility of integrating VR and e-learning into midwifery education. Interviews lasted between 45 and 120 minutes and were audio-recorded with participants' consent. All interview and FGD guides were developed based on a literature review and refined through expert consultation to ensure content validity. All recordings were transcribed verbatim, and field notes were taken to capture contextual and non-verbal observations.

Data Analysis

Data were analyzed using thematic analysis, following an iterative, inductive approach. The analysis process involved data familiarization through repeated reading of transcripts, initial coding to identify meaningful units, grouping of codes into categories, and abstraction into overarching themes. Two researchers independently coded the data, followed by regular comparison and consensus discussions to ensure coding reliability. Triangulation across participant groups and data collection methods strengthened the credibility of the findings.

The resulting themes were reviewed for internal consistency and subsequently synthesized to inform the conceptual digital learning model. Four main themes were identified: 1) fragmented integration of complementary care; 2) the need for experiential and clinically contextualized learning; 3) digital readiness and structural constraints; and 4) institutional support as a prerequisite for sustainable implementation.

Model Development

The conceptual model was developed through an iterative synthesis of thematic findings. Identified learning needs, contextual barriers, and stakeholder recommendations were translated into three core components: 1) structured curriculum modules, covering postpartum preeclampsia management, patient safety, ethical considerations, and complementary therapies (lavender aromatherapy, warm foot baths, and slow stroke back massage); 2) a VR-based storyboard, consisting of nine interactive simulation scenes representing clinical decision-making processes; 3) a mobile-accessible e-learning prototype, developed using a Moodle-based LMS, incorporating multimedia materials, interactive quizzes, and reflective learning activities.

The model represents a stakeholder-informed conceptual framework intended for subsequent pilot testing and effectiveness evaluation. An initial prototype will undergo pilot testing with midwives to assess usability, feasibility, and acceptability, followed by further evaluation using mixed-methods or quasi-experimental designs.

Trustworthiness

To ensure methodological rigor, this study employed strategies of credibility, dependability, and confirmability. Credibility was enhanced through data triangulation and independent coding by multiple researchers. Dependability was supported by maintaining a clear audit trail of data collection and analysis procedures. Confirmability was ensured by grounding interpretations in participant data and minimizing researcher bias through iterative discussion and consensus.[17]

Ethical Consent

This study was approved by the Ethics Committee of Universitas Harapan Bangsa (Approval No. B.LPPM-UHB/764/07/2025). All participants provided written informed consent prior to participation. Confidentiality and anonymity were strictly maintained, and participation was voluntary without financial incentives.

RESULTS

Overview of Themes

The analysis identified four interconnected themes: 1) fragmented integration of complementary care in postpartum preeclampsia management; 2) the need for experiential and clinically contextualized learning; 3) digital readiness and structural constraints; and 4) institutional support as a prerequisite for sustainable implementation (Table 1). These themes informed the key design requirements of the proposed digital learning model, highlighting the need for integrated content, experiential learning approaches, accessible technology, and institutional alignment.

Conceptual Synthesis: Development of the Learning Framework

The four themes collectively informed the development of a stakeholder-informed conceptual digital learning framework integrating complementary therapies into postpartum preeclampsia education. The framework consists of three interrelated components: 1) structured curriculum modules covering clinical management, patient safety, ethical considerations, and complementary therapies; 2) an immersive VR-based storyboard comprising nine sequential clinical simulation scenarios; and 3) a mobile-accessible e-learning system developed using an LMS, incorporating multimedia content, interactive quizzes, and reflective learning activities.

Virtual Reality Storyboard

The VR component was designed as an immersive, scenario-based learning environment comprising nine sequential clinical scenes that represent real-world postpartum care workflows. These simulations support step-by-step clinical reasoning, decision-making, and reflective learning. Each scene includes structured activities and learning objectives operationalized into interactive tasks, where users actively perform clinical actions rather than passively receive information. Complementary therapies are integrated through guided simulation to ensure safe and standardized practice. The detailed structure of the storyboard is presented in Table 2, and the overall learning flow is illustrated in Figure 1.

E-Learning Prototype

The e-learning system was developed using a Moodle-based LMS designed to be mobile-friendly and SCORM-compliant. The platform includes user dashboards, modular learning content, instructional videos, case-based materials, formative quizzes, and reflective exercises. A prototype platform was developed to support usability testing.

Implementation Considerations

Thematic findings also identified key barriers and enabling factors influencing implementation. Barriers included variations in digital literacy and infrastructure limitations, while enabling factors included institutional support, policy alignment, and professional recognition. These findings informed the design of a context-relevant and user-centered digital learning model.

Table 1. VR Storyboard Structure for Postpartum Preeclampsia Management

Theme	Key Points	Representative Quote
Fragmented integration of complementary care	Clinical experts further indicated that complementary interventions could be implemented safely when aligned with professional standards and ethical guidelines	*"We often focus on emergency pharmacological management. Complementary therapies are sometimes used, but they are not structured in formal training modules."*
The need for experiential and context-based digital learning	Education practitioners similarly noted that immersive simulation could enhance clinical reasoning and bridge the gap between theoretical knowledge and practice. Virtual reality was identified as a potential modality for simulating clinical workflows, while e-learning platforms were considered useful for delivering flexible theoretical content	*"We need to see and practice how to make decisions in real situations, not just read guidelines."*
Digital readiness and structural constraints	Technology experts emphasized the importance of designing mobile-friendly, low-bandwidth systems to improve accessibility and usability	*"If the system requires strong internet or complicated steps, it will be difficult for some of us to use."*
Institutional support and policy alignment	Participants highlighted the importance of integrating educational innovations within organizational structures	*"Training must be recognized formally so that midwives are motivated to participate"*

Table 2. VR Storyboard Structure for Postpartum Preeclampsia Management

Scene	Description	Key Learning Objectives
1	Orientation & case introduction	Introduce the user interface, learning objectives, and clinical case overview
2	Patient assessment (anamnesis)	Perform anamnesis and identify relevant clinical symptoms
3	Initial clinical assessment	Perform a vital sign assessment and identify signs of hypertension
4	Diagnosis & problem identification	Apply diagnostic criteria for postpartum preeclampsia
5	Clinical decision-making	Identify appropriate management strategies, including complementary therapies
6	Preparation of tools & therapy	Prepare materials for lavender aromatherapy, warm foot bath, and slow-stroke back massage
7	Intervention (complementary therapy application)	Perform complementary therapy interventions according to clinical indications
8	Monitoring & evaluation	Monitor patient response and evaluate blood pressure changes after intervention
9	Patient education & reflection	Provide counseling, reinforce self-care, and reflect on clinical decision-making

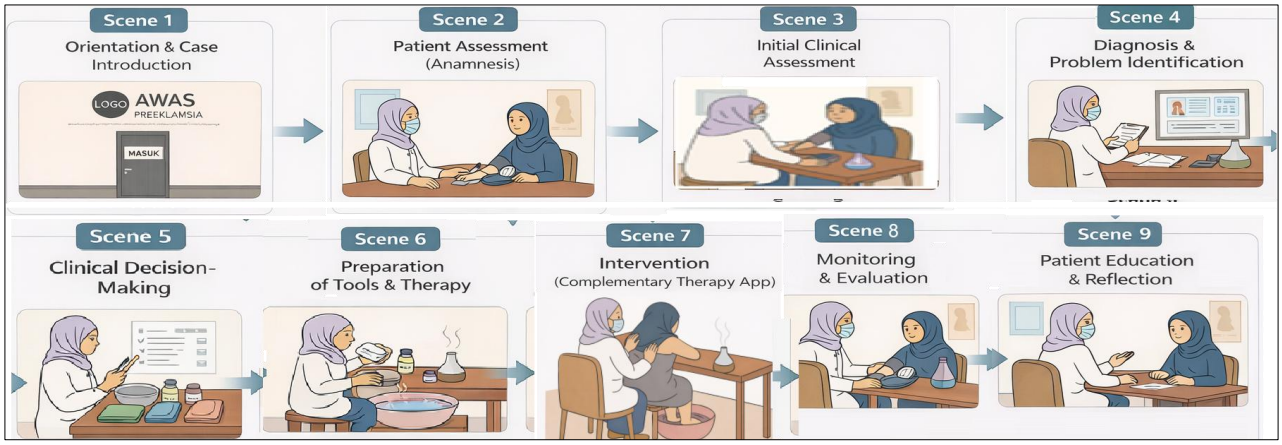

Figure 1. Virtual reality-based storyboard illustrating nine sequential clinical learning scenarios for postpartum preeclampsia management. The storyboard supports experiential learning by guiding users through patient assessment, diagnosis, clinical decision-making, intervention, monitoring, and evaluation within a simulated primary healthcare setting.

DISCUSSION

This study explored stakeholder and midwife perspectives to inform the development of a conceptual digital learning framework for postpartum preeclampsia management. The findings indicate that complementary therapies remain insufficiently integrated within existing midwifery training structures, despite growing evidence of their clinical relevance. Participants highlighted a gap between theoretical knowledge, clinical decision-making, and the structured application of non-pharmacological interventions.

From an educational perspective, these findings underscore the need for learning approaches that support experiential and context-based clinical reasoning. Digital technologies were perceived not merely as tools for content delivery but as facilitators of active learning. Virtual reality enables immersive simulation to support clinical reasoning and decision-making, while e-learning platforms provide flexible access to foundational knowledge. Importantly, participants emphasized that technological innovation must be context-sensitive, accessible, and supported by institutional structures.

These findings align with broader evidence that digital health education is influenced not only by technological availability but also by system readiness, professional culture, and organizational support. Rather than evaluating intervention effectiveness, this study provides a stakeholder-informed and contextually grounded foundation for integrating complementary therapies into digitally mediated midwifery education.

The results are consistent with previous studies demonstrating the value of immersive technologies in clinical education. For example, research in Portugal has shown that VR enhances procedural and spatial learning.[18] However, most applications focus primarily on technical skills, with limited emphasis on clinical reasoning and holistic maternal care. This study extends existing work by positioning VR within postpartum preeclampsia management and integrating complementary care approaches into a structured educational model.

Similarly, systematic reviews have shown that e-learning can improve knowledge acquisition among healthcare professionals, although implementation challenges in low- and middle-income countries remain significant.[12,19] The present findings reinforce these challenges, particularly regarding digital literacy, infrastructure limitations, and workload constraints, highlighting the importance of context-adapted solutions.

Regarding complementary therapies, previous studies have demonstrated the benefits of lavender aromatherapy, warm foot baths, and slow-stroke back massage in postpartum care.[20-22] However, these interventions are typically evaluated as isolated clinical practices rather than integrated into structured educational systems. This study contributes by embedding these therapies within a digitally supported learning framework, offering a pedagogical perspective rather than a purely clinical one.

The primary contribution of this study lies in the development of a stakeholder-informed learning framework that integrates immersive simulation, modular e-learning, and structured complementary care content. By aligning digital learning design with local context and institutional structures, the framework addresses gaps in clinical reasoning, training organization, and system readiness. A key strength of this study is its participatory approach, which incorporates perspectives from midwives, policymakers, educators, and clinical experts, thereby enhancing the model's relevance and applicability.

Globally, digital learning in health professions education has evolved along different trajectories. In high-income settings, VR is predominantly used for technical skills training, while e-learning supports knowledge acquisition but often lacks depth in clinical reasoning. In contrast, implementation in low- and middle-income settings is constrained by infrastructure, digital literacy, and workload pressures, as reflected in this study. These challenges have been widely documented in previous research, highlighting

barriers related to resource limitations, technological access, and learner readiness.[23–25] The proposed model addresses these gaps by integrating simulation-based learning, flexible digital platforms, and complementary care within a context-sensitive framework.

This study has several limitations. It was conducted in a single regency, which may limit generalizability. In addition, the study focused on conceptual model development rather than empirical evaluation; therefore, its impact on learning outcomes and clinical practice remains to be tested. The findings suggest that integrating complementary therapies into midwifery education requires structured curricular alignment and institutional support, while digital learning initiatives must prioritize accessibility, mobile compatibility, and user readiness. The proposed framework provides a foundation for future pilot implementation and evaluation. Future research should assess feasibility, acceptability, and effectiveness through phased implementation studies, including mixed-methods or experimental designs.

CONCLUSIONS AND RECOMMENDATION

This study developed a stakeholder-informed conceptual digital learning framework for postpartum preeclampsia management, integrating VR, e-learning, and structured complementary therapy content. The findings highlight a clear need for experiential, context-based learning approaches that align with clinical practice and continuing professional education. The proposed framework combines immersive simulation, structured curriculum design, and mobile-accessible learning systems, offering a contextually grounded model for strengthening midwifery education. Rather than focusing on intervention effectiveness, this study provides a foundational design for integrating complementary therapies into digitally supported clinical learning.

From a practical perspective, the findings suggest the importance of aligning digital learning innovations with institutional policies, infrastructure readiness, and professional development systems. Ensuring accessibility, usability, and formal recognition of training programs will be critical for successful implementation. Future research should focus on pilot implementation, feasibility testing, and controlled evaluation to assess the effectiveness, scalability, and potential impact of the framework on clinical competence and maternal health outcomes.

REFERENCES

1. Lawrence ER, Klein TJ, Beyuo TK. Maternal mortality in low and middle-income countries. *Obstet Gynecol Clin North Am*. 2022;49(4):713-733. https://doi.org/10.1016/j.ogc.2022.07.001
2. World Health Organization. Maternal mortality [Internet]. 2019. Available from: https://www.who.int/news-room/fact-sheets/detail/maternal-mortality
3. Aldika Akbar MI, Gumilar KE, Aziz MA, et al. Maternal death associated with preeclampsia in Indonesia. *Pregnancy Hypertens*. 2025;42:101400. https://doi.org/10.1016/j.preghy.2025.101400
4. Kyaw BM, Saxena N, Posadzki P, et al. Virtual Reality for Health Professions Education: Systematic Review and Meta-Analysis by the Digital Health Education Collaboration. *J Med Internet Res*. 2019;21(1):e12959. https://doi.org/10.2196/12959
5. Folk DM. Hypertensive disorders of pregnancy: overview and current recommendations. *J Midwifery Womens Health*. 2018;63(3):289-300. https://doi.org/10.1111/jmwh.12725
6. Fitriani H, Keni M. Risk factors of preeclampsia among pregnant women in Indonesia. *KnE Life Sci*. 2021:836-841. https://doi.org/10.18502/kls.v6i1.8761
7. Asmanidar A, Emilda E. Optimizing maternal healthcare: holistic strategies for early detection and management of preeclampsia. *Sci Midwifery*. 2024;12(1):158-167. https://doi.org/10.35335/midwifery.v12i1.1442
8. Emilda E, Magfirah M, Mutiah C, Veri N. Midwifery strategies for preeclampsia: enhancing early detection and intervention for optimal maternal health. *Path Sci*. 2023;9(7):2015-2022. https://doi.org/10.22178/pos.94-5
9. Muflihah IS, Margiana W, Kurniati CH, Pantiawati I, Rini S. Pelaksanaan terapi komplementer kebidanan di Kabupaten Banyumas tahun 2021. *J Cakrawala Ilmiah*. 2022;1(7):1871-1880. https://doi.org/10.53625/jcijurnalcakrawalailmiah.v1i7.1810
10. Zackoff MW, Real FJ, Sahay RD, et al. Impact of an immersive virtual reality curriculum on medical students' clinical assessment of infants with respiratory distress. *Pediatr Crit Care Med*. 2020;21(5):477-485. https://doi.org/10.1097/PCC.0000000000002249
11. Chiu HY, Kang YN, Wang WL, et al. The role of active engagement of peer observation in the acquisition of surgical skills in virtual reality tasks for novices. *J Surg Educ*. 2019;76(6):1655-1662. https://doi.org/10.1016/j.jsurg.2019.05.004
12. Aryee GFB, Amoadu M, Obeng P, et al. Effectiveness of eLearning programme for capacity building of healthcare professionals: a systematic review. *Hum Resour Health*. 2024;22(1):60. https://doi.org/10.1186/s12960-024-00924-x
13. Rini S, Andayani TR. Postnatal complementary care training model for preeclampsia. *Nusantara Sci Technol Proc*. 2024:31-37. https://doi.org/10.11594/nstp.2024.4306
14. Rini S, Soetrisno S, Andayani TR, Suminah S. Complementary and alternative care for postpartum preeclampsia: a scoping review. *Pharmacia*. 2023;70:867-875. https://doi.org/10.3897/pharmacia.70.e110572
15. Müller A, Schaaf J. User or patient/human or person? development of a practical framework for applying user-centered design to vulnerable populations for digital transformation in healthcare. *Digit Health*. 2025;11:20552076251375835. https://doi.org/10.1177/20552076251375835
16. Hennink M, Kaiser BN. Sample sizes for saturation in

qualitative research: a systematic review of empirical tests. *Soc Sci Med*. 2022;292:114523. https://doi.org/10.1016/j.socscimed.2021.114523
17. Nowell LS, Norris JM, White DE, Moules NJ. Thematic analysis: striving to meet the trustworthiness criteria. *Int J Qual Methods*. 2017;16(1):1609406917733847. https://doi.org/10.1177/1609406917733847
18. Foronda CL, Fernandez-Burgos M, Nadeau C, Kelley CN, Henry MN. Virtual Simulation in Nursing Education: A Systematic Review Spanning 1996 to 2018. *Simul Healthc.* 2020;15(1):46-54. https://doi.org/10.1097/SIH.0000000000000411
19. Hui CY, Abdulla A, Ahmed Z, et al. Mapping national information and communication technology (ICT) infrastructure to the requirements of potential digital health interventions in low- and middle-income countries. *J Glob Health*. 2022;12:04094. https://doi.org/10.7189/jogh.12.04094
20. Susanti E, Febrina L, Andini IF. Effectiveness of warm water immersion combination of rose and lavender aromatherapy on anxiety and pain scale of laboring mother in independent midwifery practice. *J Penelit Pendidik IPA*. 2025;11(5):619-627. https://doi.org/10.29303/jppipa.v11i5.11236
21. Palanta L, Dinengsih S, Siauta JA. The effect of warm foot soak on blood pressure in pregnant women with essential hypertension. *J Midpro*. 2021;13(1):124-130. https://doi.org/10.30736/md.v13i1.255
22. Hidayah N, Ayatul Azlina F. The effectiveness of slow stroke back massage (SSBM) therapy as a nursing intervention to reduce hypertension in postpartum mothers: case report. *J Health*. 2024;3(2):27-31. https://banuainstitute.org/JOHE/article/view/106
23. Tudor Car L, Poon S, Kyaw BM, et al. Digital Education for Health Professionals: An Evidence Map, Conceptual Framework, and Research Agenda. *J Med Internet Res*. 2022;24(3):e31977. https://doi.org/10.2196/31977
24. Frehywot S, Vovides Y, Talib Z, et al. E-learning in medical education in resource constrained low- and middle-income countries. *Hum Resour Health*. 2013;11:4. https://doi.org/10.1186/1478-4491-11-4.
25. O'Doherty D, Dromey M, Lougheed J, Hannigan A, Last J, McGrath D. Barriers and solutions to online learning in medical education - an integrative review. *BMC Med Educ*. 2018;18(1):130. https://doi.org/10.1186/s12909-018-1240-0