



**ประสิทธิผลของการเรียนออนไลน์แบบเปิดสำหรับมหาชนรายวิชาการพยาบาลสุขภาพสตรี
และทารกแรกเกิดต่อความรู้ พฤติกรรมการเรียนรู้ และความพึงพอใจในการเรียนของ
นักศึกษาพยาบาล : การวิจัยกึ่งทดลอง**

**The Effectiveness of a Massive Open Online Course on Knowledge, Learning
Behavior, and Learning Satisfaction in Women's Health and Newborn Nursing
Among Nursing Students: A Quasi-Experimental Study**

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บทคัดย่อขยาย

ความเป็นมาและวัตถุประสงค์ การเรียนออนไลน์แบบเปิดสำหรับมหาชนถูกนำมาใช้เพื่อเสริมสร้างความรู้ของนักศึกษาพยาบาลในสาขาต่าง ๆ ของการพยาบาล อย่างไรก็ตาม ยังขาดการศึกษาเกี่ยวกับประสิทธิผลของวิธีการดังกล่าวในการพยาบาลสุขภาพสตรีและทารกแรกเกิด การวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาประสิทธิผลของการเรียนออนไลน์แบบเปิดสำหรับมหาชนต่อความรู้เกี่ยวกับการพยาบาลสุขภาพสตรีและทารกแรกเกิด พฤติกรรมการเรียนรู้ และความพึงพอใจในการเรียนรู้ของนักศึกษาพยาบาล

วิธีการวิจัย การศึกษานี้เป็นการวิจัยกึ่งทดลองแบบกลุ่มเดียว วัดก่อน-หลัง ผู้เข้าร่วมวิจัยประกอบด้วยนักศึกษาพยาบาลชั้นปีที่ 3 จำนวน 184 คน จากสถาบันเครือข่าย 3 แห่งในประเทศไทย คัดเลือกโดยการสุ่มแบบแบ่งชั้น เก็บรวบรวมข้อมูลระหว่างเดือนเมษายนถึงพฤษภาคม พ.ศ. 2568 โดยใช้แบบประเมินข้อมูลประชากร แบบประเมินความรู้เกี่ยวกับการพยาบาลสุขภาพสตรีและทารกแรกเกิด แบบสอบถามพฤติกรรมการเรียนรู้ และแบบสอบถามความพึงพอใจในการเรียนรู้ผ่านการเรียนรู้ออนไลน์แบบเปิดสำหรับมหาชน มีดัชนีความสอดคล้องระหว่างข้อคำถามกับวัตถุประสงค์เท่ากับ 1.00, 0.67 และ 1.00 ค่าสัมประสิทธิ์อัลฟาของครอนบาคเท่ากับ 0.74, 0.90 และ 0.82 ตามลำดับ วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนาและการทดสอบทีแบบคู่



ผลการวิจัย คะแนนเฉลี่ยของความรู้เกี่ยวกับการพยาบาลสุขภาพสตรีและทารกแรกเกิดหลังการทดลอง ($\bar{X}=28.46$, S.D. = 5.67) สูงกว่าก่อนการทดลอง ($\bar{X}=16.45$, S.D. = 5.40) อย่างมีนัยสำคัญทางสถิติ ($t=23.22$, $p < .001$) คะแนนเฉลี่ยรวมของพฤติกรรมการเรียนรู้ออนไลน์ในรายวิชาการพยาบาลสุขภาพสตรีและทารกแรกเกิดอยู่ในระดับสูง ($\bar{X}=4.03$, S.D. = 0.96) ความพึงพอใจต่อการเรียนรู้ผ่านการเรียนออนไลน์แบบเปิดสำหรับมหาชนโดยรวมอยู่ในระดับสูงสุด ($\bar{X}=4.42$, S.D. = 0.69) ความพึงพอใจต่อเนื้อหา ($\bar{X}=4.39$, S.D. = 0.68) และความพึงพอใจต่อการออกแบบ ($\bar{X}=4.44$, S.D. = 0.69) อยู่ในระดับสูงสุด

สรุปและข้อเสนอแนะ การเรียนออนไลน์แบบเปิดสำหรับมหาชนมีศักยภาพที่จะบูรณาการเข้ากับการศึกษาด้านการพยาบาลเพื่อเป็นแนวทางการเรียนรู้ด้วยตนเองสำหรับนักศึกษาพยาบาล อย่างไรก็ตาม การศึกษานี้มีข้อจำกัดสำคัญคือ ขาดการเปรียบเทียบระหว่างกลุ่ม ควรมีการศึกษาวิจัยเพิ่มเติมเพื่อปรับปรุงการนำไปใช้ต่อไป

คำสำคัญ: การเรียนออนไลน์แบบเปิดสำหรับมหาชน, ทารกแรกเกิด, นักศึกษาพยาบาล, ความพึงพอใจ, สุขภาพสตรี

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Extended Abstract

Background and Objectives The Massive Open Online Course (MOOC) has been used to enhance nursing students' knowledge in various areas of nursing, but its effectiveness has not been examined in women's health and newborn nursing. This study aims to examine the effectiveness of MOOC on nursing students' knowledge of women's health and newborn nursing, learning behaviors, and learning satisfaction.

Methods This was a quasi-experimental one-group pretest-posttest study. The participants consisted of 184 third-year nursing students from three network institutions in Thailand. Participants were selected using stratified random sampling. Data was collected between April and May 2025 using demographic data form, the Knowledge in Women's Health and Newborn Nursing Scale, the Learning Behavior Questionnaire, and the Satisfaction with Learning on MOOC Questionnaire. The index of item-objective congruence was 1.00, 0.67, and 1.00. Cronbach's alpha coefficients were 0.74, 0.90, and 0.82, respectively. Data analysis was performed with descriptive statistics and a paired t-test.

Results The mean score of knowledge in women's health and newborn nursing at post-test ($\bar{X}=28.46$, S.D. = 5.67) was higher than at pre-test ($\bar{X}=16.45$, S.D. = 5.40) with statistical significance ($t = 23.22$, $p < .001$). The total mean score of online learning behavior in women's health and newborn nursing was at a high level ($\bar{X} = 4.03$, S.D. = 0.96). The overall satisfaction with learning through MOOC was at the highest level ($\bar{X} = 4.42$, S.D. = 0.69). The satisfaction with the content ($\bar{X} = 4.39$, S.D. = 0.68) and the satisfaction with the design ($\bar{X} = 4.44$, S.D. = 0.69) were at the highest level.

Conclusion and Recommendation The MOOC has the potential to be integrated into nursing education as a self-directed learning approach for nursing students. However, this study's main limitation is the lack of a between-group comparison. Further investigation is required to improve its applicability.

Keywords: Massive Open Online Course (MOOC), Newborns, Nursing students, Satisfaction, Women's health



Introduction

Promoting women's health during the entire pregnancy, delivery, and postpartum period is essential, as the health of mothers and newborns is the priority target of the Sustainable Development Goals (United Nations Children's Fund [UNICEF], 2026). This involves assuring access to sexual and reproductive health care, identifying and avoiding diseases, and maintaining a healthy diet (World Health Organization [WHO], 2025a) to help women and their unborn children achieve their maximum potential for health and wellbeing. Unfortunately, evidence reveals suboptimal maternal and newborn outcomes. Globally, maternal mortality remains a major public health concern, with approximately 75 % of maternal deaths resulting from pregnancy-related hypertension, infections, unsafe abortion, and severe hemorrhage (WHO, 2025b). For newborns, approximately 240,000 neonates worldwide lose their lives from congenital conditions within 28 days of birth each year (WHO, 2023). Only 48% of infants below 6 months of age globally are exclusively breastfed, being far lower than the set goal of 70 % by 2030 (WHO, 2025c) and approximately 250 million children in low- and middle-income countries (LMICs) under the age of five are susceptible to delayed development (UNICEF, 2023). In Thailand, the rate of exclusive breastfeeding for 6 months was only 28.6 % (National Statistical Office of Thailand, 2023) and only 70.3 % of early children had appropriate development compared to the national target of 85% (Jungpanich & Ployluan, 2023). Most of these adverse outcomes are preventable and can be managed as part of the women's health and newborn care.

Nurses are healthcare professionals who work closely with mothers and newborns (Hoseini et al., 2024). Nursing education is the initial step to train future nurses towards optimal maternal and newborn care. Women's health and newborn nursing course provides training to improve knowledge and clinical skills, covering reproductive health and contraception, physiological and psychosocial changes during pregnancy and antenatal care, nursing care during intrapartum period, breastfeeding, nursing care of the newborn baby and those with congenital deviation (Thailand Nursing and Midwifery Council [TNMC], 2025). Unfortunately, nursing students face many challenges related to the maternal and newborn care (Bowdler et al., 2022; Dube et al., 2026; Haseli et al., 2024). Current approaches to teaching women's health and newborn nursing vary, including flipped classroom (Bogren et al., 2022), simulation-based learning (Bogren et al., 2022), problem-based learning (Wannarit, 2023), and blended learning (Srisawad & Puttapitukpol, 2025). However, in the 21st



century, online teaching and learning are critical for both theory and practice of women's health and newborn nursing (Bogren et al., 2022), allowing students to learn and review knowledge anytime, anywhere (Jittitaworn & Wisanskoonwong, 2023) and promoting self-directed learning behaviors (Berre et al., 2025). Massive Open Online Course (MOOC) is a popular form of online education that allows large numbers of learners to participate simultaneously (massive), is freely accessible without formal registration (open), is delivered via the internet (online), and follows a structured learning format (course) (Liu et al., 2021). MOOC is beneficial in improving knowledge in various fields of nursing (Nieder et al., 2022), including enhanced academic achievement in areas such as contraception, physiological and psychosocial changes during pregnancy, health assessment of pregnant women, and obstetric examination (Chainakin et al., 2025). Nevertheless, its effectiveness has not been well established on enhancing knowledge that covers the comprehensive topics of women's health and newborn nursing (TNMC, 2025) among nursing students.

In addition, few studies have applied a systematic evaluation framework to assess MOOC across multiple learning dimensions. This gap highlights the need for further investigation into the role of MOOC in supporting holistic learning in women's health and newborn nursing. Therefore, this study aims to examine the effectiveness of MOOC on nursing students' knowledge, learning behavior, and satisfaction with learning. The findings are expected to provide empirical evidence to support the integration of MOOC into nursing education and inform the development of effective, learner-centered digital learning strategies.

Objectives

1. To compare nursing students' knowledge in women's health and newborn nursing before and after participation in MOOC.
2. To examine learning behaviors in women's health and newborn nursing after participation in MOOC.
3. To evaluate nursing students' satisfaction with learning through MOOC.



Hypotheses

1. Nursing students' knowledge in women's health and newborn nursing was higher after participating in MOOC than before participation.
2. Nursing students' learning behavior in women's health and newborn nursing was at a high level after participating in MOOC.
3. Nursing students' satisfaction with learning through MOOC was at a high level.

Conceptual Framework

The process of development and evaluation of the MOOC was guided by Kirkpatrick's 3-level Model (Kirkpatrick & Kirkpatrick, 2006) to enable the comprehensive evaluation. Level 1, reaction, is an assessment of students' feelings towards the instructional program. It involved the assessment of students' satisfaction with learning through MOOC. Learner satisfaction has been identified as a key indicator of engagement and acceptance of online learning platforms (Padilha et al., 2021). Level 2, learning, is a measure of what the students have learned from an instructional program (Kirkpatrick & Kirkpatrick, 2006). Students took quizzes after each lesson to summarize nursing content, performance in critical thinking tasks, and application of knowledge into practice. MOOC has been shown to improve knowledge and cognitive outcomes through structured content, multimedia learning, and self-paced study (Chainakin et al., 2025; Nieder et al., 2022). Chainakin et al. (2025) reported that nursing students who learned through MOOC achieved significantly higher post-test knowledge scores compared with those receiving conventional instruction, highlighting the effectiveness of MOOC in promoting knowledge acquisition and self-directed learning. Level 3, behavior, is an assessment of how students apply the knowledge and skills acquired from engagement in the program. It involved assessing students' learning behavior, defined as how well nursing students could apply the knowledge gained from learning through MOOC to their practice or further academic performance. Online learning environments promote learning behaviors such as self-regulation, active engagement, and application of knowledge to academic and clinical contexts (Berre et al., 2025; De Gagne et al., 2025) (Figure 1).

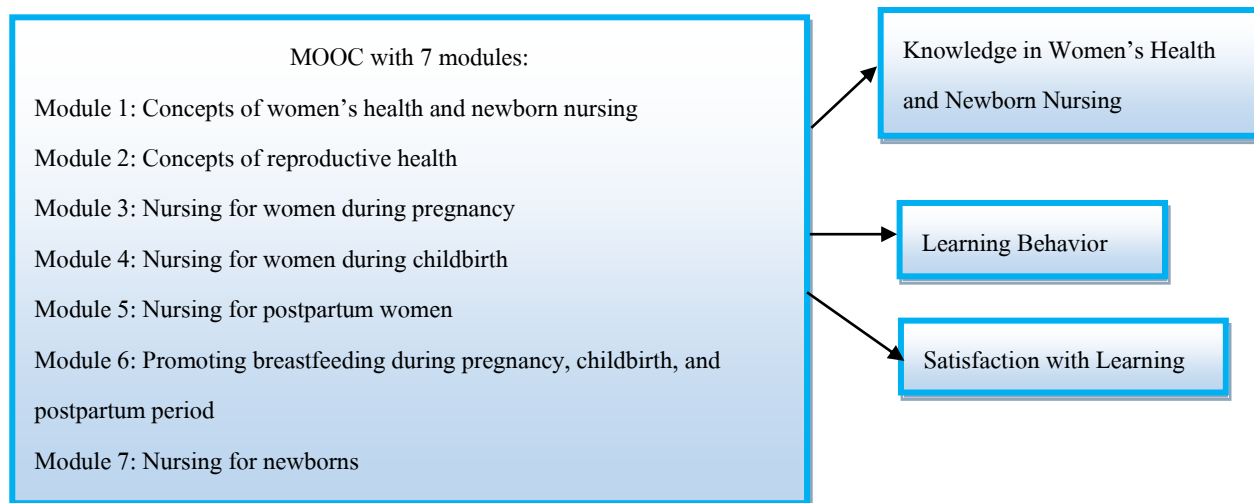


Figure 1 Conceptual framework

Research Methodology

This study adopted quasi-experimental research with one group pretest-posttest design.

Participants

The participants comprised 184 third-year nursing students in the academic year 2024 at three institutions, including Christian University, Boromarajonani College of Nursing, Yala, and Ubon Ratchathani University selected using stratified random sampling with proportional allocation being used in the stratified random sampling across institutions. Sample size was calculated using Yamane (1970) formula: $n = \frac{N}{1 + Ne^2}$ with a significance level of 0.05 (Table 1). This formula is appropriate for heterogeneous sample (Polit & Beck, 2017).

Table 1 Sample size calculation by institution (n = 184)

Institution	Population	Sample size	Adjusted sample size for actual recruitment
Faculty of Nursing, Christian University	151	81.84	82
Faculty of Nursing, Ubon Ratchathani University	107	57.99	58
Boromarajonani College of Nursing, Yala	80	43.36	44
Total	338	183.20	184



The participants were selected following the inclusion criteria: 1) nursing students in the network institutions who had completed at least 1 semester of the Maternal and Child Nursing and Midwifery Course I that is equivalent across the participating institutions in terms of content and learning outcomes according to the Thailand Nursing and Midwifery Council, 2) Thai nationality, 3) able to read and write in the Thai language, and 4) willing to participate. They were excluded in case they: 1) were unable to continuously participate in the research project, 2) wished to withdraw from the study, and 3) had serious health conditions requiring hospitalization that interfered with continued participation. All 184 participants remained in the study and were used for analysis.

Research instruments

1. The demographic data form was created by the research team. It consists of 4 items: 1) gender, 2) age, 3) religion, and 4) year of study.

2. The Knowledge in Women's Health and Newborn Nursing Scale was created by the research team from a review of related literature. It consists of 40 multiple choice items. Respondents obtain 1 point if their response is correct and 0 point if their response is incorrect. Total possible scores range between 0 and 40, classified into three levels of knowledge in women's health and newborn nursing: a score of 1-23 reflecting a low level of knowledge, a score of 24-31 reflecting a moderate level of knowledge, and a score of 32-40 reflecting a high level of knowledge. This scale was examined for content validity by a panel of three experts, including a teacher with experience in designing nursing courses using MOOC, and two nursing instructors in women's health and newborn nursing. The Index of Item-Objective Congruence (IOC) was 1.00. Internal consistency reliability was pilot tested in 30 nursing students not included in the actual sample, yielding a Cronbach's alpha of 0.74.

3. The Learning Behavior Questionnaire was created by the research team from the review of related literature. It consists of 18 items rated on a 5-point scale: 1 = never, 2 = very little, 3 = sometimes, 4 = often, and 5 = always. Total scores range between 18 and 90, which is calculated into a mean score classified into five levels of learning behavior: 1.00-1.80 (the lowest level of behavior), 1.81-2.60 (low level of behavior), 2.61-3.40 (moderate level of behavior), 3.41-4.20 (high level of behavior), and 4.21-5.00 (the highest level of behavior). This questionnaire was examined for



content validity by a panel of experts above, yielding an IOC of 0.67. Internal consistency reliability was pilot tested in 30 nursing students, yielding a Cronbach's alpha of 0.90.

4. The Satisfaction with Learning on MOOC Questionnaire was created by the research team from a review of related literature. It comprises 21 items in two subscales: 1) content (13 items), and 2) design (8 items). Each item is rated on a 5-point scale: 1 = least, 2 = little, 3 = moderate, 4 = much, and 5 = most. Total score ranges from 21 to 105, which is calculated into a mean score classified into five levels of satisfaction: 1.00-1.80 (the lowest level of satisfaction), 1.81-2.60 (a low level of satisfaction), 2.61-3.40 (a moderate level of satisfaction), 3.41-4.20 (a high level of satisfaction), and 4.21-5.00 (the highest level of satisfaction). This questionnaire was examined for content validity by a panel of experts above, yielding an IOC of 1.00. Internal consistency reliability was pilot tested in 30 nursing students, yielding a Cronbach's alpha of 0.82.

The intervention

The MOOC was developed by the research team from the literature review (Cunningham et al., 2022; TNMC, 2025) in the form of videos, with virtual lectures, infographics, motion graphics, and online documents, self-assessment, discussions via online discussion boards, and pre-, mid-, and post-lesson quizzes. The MOOC was reviewed by the same experts above and revised according to expert suggestions. The total learning hours were 5 hours and 12 minutes, with 7 modules (Figure 1).

Ethical considerations

This study was approved by the Center of Social and Behavioral Sciences Institutional Review Board Committee, Prince of Songkla University (Study code: PSU IRB 2025 -LL Nur -001 (Internal)). The objectives, the methods, and their right to voluntarily engage in the study were explained to the participants. They could leave the study at any moment without having an impact on their educational achievements. Written informed consent was obtained from all participants prior to their involvement in the study. Confidentiality and anonymity were strictly maintained throughout the research process.

Data collection

Data were collected between April and May 2025. The researchers responsible for each research setting recruited the participants based on the inclusion criteria. The participants completed the demographic data form and took a pre-test by completing the Knowledge in Women's Health and



Newborn Nursing Scale online. Then, participants were instructed on how to use the MOOC. They could choose to either access the MOOC using their own electronic devices (laptops or smartphones) or using the computer at their university. The participants were asked to access the MOOC in their free time and complete all seven modules within a six-week period. During the six-week intervention period, the participants did not receive any additional related instruction. Total duration of engagement was 5 hours 12 minutes. Finally, post-test was done using the Knowledge in Women's Health and Newborn Nursing Scale, the Learning Behavior Questionnaire, and the Satisfaction with Learning on MOOC Questionnaire immediately after engagement in the last module. To ensure that post-test was administered under standardized conditions across all participating institutions, the participants were asked to complete the questionnaires in a private and quiet room.

Data analysis

The Statistical Package for the Social Sciences (SPSS) was used to analyze the data. The demographic data, knowledge in women's health and newborn nursing, learning behavior, and satisfaction with learning on MOOC were described using descriptive statistics. Knowledge in women's health and newborn nursing was compared between before and after using the MOOC with paired t-test. The normality assumption was tested using the Kolmogorov–Smirnov test, and the findings demonstrated that the data met the assumption of normal distribution ($p > 0.05$).

Results

Characteristics of the Participants

A total of 184 nursing students participated in this study. Most of the participants were female (95.10%), with a mean age of 21.70 years (S.D. = 5.66). Most participants identified as Buddhist (76.63%), followed by Muslim (22.28%) and Christian (1.09%) (Table 2).

Table 2 Characteristics of the participants (n = 184)

Characteristics	Number	Percentage
Gender		
Female	176	95.10
Male	8	4.90



Characteristics	Number	Percentage
Age (years) ($\bar{X} = 21.70$, S.D. = 5.66)		
20	3	1.63
21 and over	181	98.37
Religion		
Buddhist	141	76.63
Christian	2	1.09
Muslim	41	22.28

The mean score of knowledge in women's health and newborn nursing at post-test ($\bar{X} = 28.46$, S.D. = 5.67) was significantly higher than that at pre-test ($\bar{X} = 16.45$, S.D. = 5.40) (Table 3)

Table 3 Comparison of knowledge in women's health and newborn nursing between pre- and post-tests (n = 184)

Variable	Pre-test		Post-test		df	t	p-value
	$\bar{X}$	S.D.	$\bar{X}$	S.D.			
Knowledge in women's health and newborn nursing	16.45	5.40	28.46	5.67	183	23.22	p < .001

Learning behavior in women's health and newborn nursing

The total mean score of online learning behavior in women's health and newborn nursing through the MOOC was at a high level ($\bar{X} = 4.03$, S.D. = 0.96) (Table 4).

Table 4 Levels of Learning Behaviors through MOOC (n = 184)

Items	Descriptions	Mean	S.D.	Level
1.	You study online through MOOC.	4.08	1.07	High
2.	You complete the exercises on the platform.	4.17	1.02	High
3.	You participate in online group discussions/chats.	3.62	1.20	High
4.	You can manage your learning time on the platform to suit your plans and expectations set for each session.	4.02	0.99	High
5.	You are committed to understanding and learning the content	4.16	0.89	High



Items	Descriptions	Mean	S.D.	Level
	presented on MOOC.			
6.	You set learning goals before starting the lesson.	4.06	0.92	High
7.	You regularly review and adjust your learning plan.	3.98	0.93	High
8.	You can manage stress from studying on the platform.	3.92	0.92	High
9.	You can address any obstacles that arise while studying through MOOC.	4.05	0.93	High
10.	You can contact the instructor for inquiries and advice when facing problems while learning on platform.	3.84	1.14	High
11.	You can exchange learning ideas with your peers through MOOC.	3.70	1.21	High
12.	You make effective use of the tools and learning resources provided on MOOC to support your learning.	4.10	0.96	High
13.	You seek additional information to enhance your understanding of the content.	4.12	0.87	High
14.	You apply the knowledge gained from the platform to real-life situations and nursing practice.	4.27	0.81	High
15.	You evaluate your learning progress periodically to check whether you are achieving your goals.	4.13	0.87	High
16.	You use various learning techniques to remember and understand the content.	4.27	0.87	High
17.	You check learning outcomes after each module.	4.13	0.87	High
18.	You passed at least 60% in each module.	4.07	0.87	High
Total		4.03	0.96	High

Note. 1.00-1.80 (the lowest level of behavior), 1.81-2.60 (low level of behavior), 2.61-3.40 (moderate level of behavior), 3.41-4.20 (high level of behavior), and 4.21-5.00 (the highest level of behavior)

The satisfaction with learning through MOOC

The overall satisfaction with learning through MOOC was at the highest level ($\bar{X}$ = 4.42, S.D. = 0.69). When examined by dimension, satisfaction with the content was at a high level ($\bar{X}$ = 4.39, S.D. = 0.68) whereas satisfaction with the design was at the highest level ($\bar{X}$ = 4.44, S.D. = 0.69) (Table 5).

**Table 5** Levels of Satisfaction with Learning through MOOC (n = 184)

Items	Descriptions	Mean	S.D.	Level
Content				
1.	The teaching content is clear and easy to understand.	4.12	0.86	High
2.	The explanation is detailed/covers all topics.	4.08	0.90	High
3.	The content covers all necessary topics in the course.	4.51	0.59	Highest
4.	The content is relevant to actual practice in nursing.	4.54	0.62	Highest
5.	The examples/case studies help you understand how to apply the knowledge in real-world situations.	4.53	0.59	Highest
6.	Information is cited from reliable/up-to-date sources.	4.51	0.61	Highest
7.	The content is in depth enough to develop analytical thinking and problem-solving skills.	4.34	0.72	Highest
8.	The use of supplementary media helps improve your understanding of the content.	4.45	0.62	Highest
9.	The content suits knowledge and skill level.	4.42	0.62	Highest
10.	The content enables you to study effectively.	4.43	0.66	Highest
Total (Content)		4.39	0.68	Highest
Design				
11.	The content presentation is interesting for learning.	4.52	0.65	Highest
12.	The content can be accessed anywhere, anytime.	4.48	0.65	Highest
13.	Activities/exercises enhance interaction with content.	4.36	0.75	Highest
14.	The design and interface are beautiful and attractive.	4.54	0.71	Highest
15.	The colors/illustrations are appropriate.	4.46	0.67	Highest
16.	The contents are organized and clear.	4.40	0.68	Highest
17.	The fonts are easy to read and comfortable.	4.36	0.73	Highest
18.	The platform is compatible with various devices.	4.43	0.68	Highest
19.	The platform is designed to accommodate students with diverse language and technology abilities.	4.38	0.68	Highest
20.	The functions facilitate special needs students.	4.50	0.74	Highest
21.	The design makes learning continuous.	4.47	0.66	Highest
22.	The learning assessment system, score notification and answer keys are reliable.	4.41	0.68	Highest



Items	Descriptions	Mean	S.D.	Level
	Total (Design)	4.44	0.69	Highest
	Overall satisfaction	4.42	0.69	Highest

Note. 1.00-1.80 (lowest satisfaction), 1.81-2.60 (low satisfaction), 2.61-3.40 (moderate satisfaction), 3.41-4.20 (high satisfaction), and 4.21-5.00 (highest satisfaction)

Discussion

The findings revealed that the mean scores of knowledge in women's health and newborn nursing at post-test were significantly higher than at pre-test. This is consistent with earlier study, which showed that engagement in MOOC led to higher academic achievement in terms of knowledge in maternal, newborn and midwifery nursing (Chainakin et al., 2025). The MOOC incorporated the contents of women's health and newborn nursing as outlined by the TNMC (2025) covering the concepts of reproductive health and contraception, physiological and psychosocial changes during pregnancy and antenatal care, nursing care during labor and delivery, breastfeeding, nursing care of the normal newborn and those with congenital deviation. These topics were presented along with multimedia to enhance students' understanding. Learning through MOOC that incorporates multimedia features such as images, animations, text, and sound can support memory, and knowledge transfer and comprehension (Chainakin et al., 2025; Nieder et al., 2022).

The scores of learning behavior of nursing students after using the MOOC were higher than before using it. The finding aligned with a recent study that MOOC promoted positive learning behaviors in Thai mental health and psychiatric nursing students (Khongtor et al., 2025). In the 21st century, digital technology plays a crucial role in nursing education (Gause et al., 2022). Online learning via the internet allows students to learn anywhere, anytime, without having to be physically present in the classroom. Teachers and students can interact during learning, using various media such as text, images, audio, video, and other multimedia, making lessons engaging and allowing for content review at any time (De Gagne et al., 2025). These features of online learning influence nursing students' positive attitude toward online learning, which contributed to better online learning behavior (Wanngamwiset et al., 2023). Particularly in the context of women's health and newborn nursing, nursing students face many challenges associated with the inadequate clinical environment that limited their opportunity to experience the full range of midwifery skills (Mramel et al., 2024).



MOOC's diverse features, including its flexibility, accessibility, interactive elements, visual and audio components facilitated midwifery students' knowledge acquisition and complemented the existing courses through self-directed learning (Ghallab et al., 2023).

The overall satisfaction with learning through MOOC, and the satisfaction with the content aspect and the design aspect were all at the highest level. These findings corroborate another Thai study on the use of MOOC where nursing students had a very high level of satisfaction in terms of modernity, appropriateness of language and content, and the ease of use (Puttaruksa et al., 2023). Consistently, Thai mental health and psychiatric nursing students had the highest level of overall satisfaction with MOOC, and with the content and design subdomains (Khongtor et al., 2025). The development of MOOC by experts in academic and clinical fields guarantees quality of the content in the creation of multimedia contents for learning that prioritizes enjoyment and involves users as active role-players (Padilha et al., 2021). However, the findings reveal some areas for improvement such as the clarity of the content, and the coverage of the lessons for all important topics. The findings suggest that MOOC could be further strengthened as an instructional strategy to promote higher-order cognitive skills and active learner engagement, particularly when integrated into a blended learning approach for delivering theoretical content (Nieder et al., 2022).

Limitations

The quasi-experimental one group pretest-posttest design conducted among third-year nursing students lacks between-group comparison to provide robust evidence on the effectiveness of the MOOC and the findings may not be fully generalizable to nursing students in other years. Moreover, our study has additional methodological limitations in terms of potential threats to internal validity, reliance on self-reported measures, and the short-term nature of outcome assessment.

Conclusions

Learning through the MOOC is effective in increasing knowledge of nursing students in women's health and newborn nursing, promoting appropriate learning behaviors, and creating satisfaction with the learning process.



Suggestion

Implications of findings

The use of MOOC has a potential to be implemented as a self-directed learning platform for nursing students to review their knowledge before clinical practice in women's health and newborn nursing. Nursing schools can support and incorporate the MOOC into current educational frameworks and but more investigation on its improvement and applicability is needed.

Recommendations for future research

Future studies should employ more rigorous research designs, such as randomized controlled trials or quasi experimental designs with comparison groups, to further examine the effectiveness of MOOC-based learning. In addition, studies involving larger and more diverse samples of nursing students from different educational institutions are recommended to enhance the generalizability of the findings.

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