
ORIGINAL ARTICLE

Model Development of Professional Nursing Competency by Simulation-Based Learning for Urgent Management of Service Patients in the Outpatient Department, Phrapokklao Hospital

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Received: November 20, 2025 **Revised:** January 19, 2026 **Accepted:** February 02, 2026

ABSTRACT

BACKGROUND: The incidence of outpatient deterioration during waiting periods is preventable through effective screening systems, surveillance systems, and the development of nurses' competencies in assessing and managing emergencies. This can be achieved through an appropriate and effective competency development model. The use of simulations enables nurses to practice, experiment, and solve problems in ways that mirror real-world situations, thereby enhancing patient safety.

OBJECTIVE: To create and assess the effectiveness of a competency development model.

METHODS: This was an action research study. The sample included 49 professional nurses and 50 patients. The research was conducted at the outpatient department of Phrapokklao Hospital from January to December 2025. The research instrument was the professional nurse competency development model, which was approved by three experts and had a validity of 0.7. Data collection instruments included a general information questionnaire, a knowledge assessment scale (reliability 0.9), a competency assessment scale, and a satisfaction assessment scale for professional nurses and patients (reliability 0.9, 1.0, 0.9, respectively). Statistical analyses included percentages, means, and standard deviations.

RESULTS: A professional nurse competence development model using simulation learning was developed. It consisted of three modules, utilizing a rotating role of the attending nurse, followed by a review of events and group discussions. The model results showed that the proportion of knowledge meeting the criteria increased from 65.3% to 93.9%. Competency and decision-making increased from 61.2% to 93.9%, meeting the criteria. Nurse and patient satisfaction were high (M=4.5, 4.4, respectively). No worsening of the condition was observed after three months of monitoring.

CONCLUSIONS: The competency development model enhances nurses' knowledge, skills, and decision-making in emergency management, improving patient safety.

KEYWORDS: nursing competencies, emergency management, simulation based learning

INTRODUCTION

The incidence of deterioration in outpatient conditions while waiting for examination can be prevented through effective screening systems, continuous monitoring, and the development of nurses' competencies through appropriate and effective methods. The use of simulations enables nurses to practice, experiment, and solve problems in situations that closely resemble real-world scenarios, thereby enhancing patient safety and improving nursing quality. A review identified problems and their causes, including those arising from a lack of knowledge, skills, and assessment abilities, as well as delays in nurses' decision-making during emergencies. The concept of nursing competence emphasizes that nurses must possess the knowledge and skills to perform their roles. Critical thinking, clinical decision-making, and communication skills to cope with rapidly changing situations, particularly in the outpatient context with its diverse range of health problems and time constraints, are factors that increase the risk of adverse events¹.

Outpatient nursing services encompass diagnosis, treatment, health promotion, disease prevention, and rehabilitation, in accordance with outpatient nursing service standards. This includes pre-existing, intra-existing, and post-existing nursing care; continuous care; health promotion; health protection; information provision; rights protection, and nursing documentation². Adhering to these standards requires the comprehensive professional competence of nurses, encompassing knowledge, skills, and attitudes. In particular, the competence in health assessment, clinical analysis, prioritization of urgency, and appropriate nursing decision-making is crucial. Given the large number of outpatients and their diverse presenting conditions, the Outpatient

Nursing Department at Phrapokklao Hospital has implemented these nursing practice standards within its service system and continuously improves quality, particularly in patient screening, in accordance with the Thai Emergency Room Screening Manual. This divides patients into five categories: (1) Critically ill patients requiring resuscitation must receive immediate assistance because their condition poses a life-threatening threat. (2) Emergency patients must receive treatment within ten minutes to prevent death or disability. (3) Non-urgent patients can wait, but delays can lead to complications. They must see a doctor within 30 minutes. (4) General patients (semi-urgent) should see a doctor within 1–2 hours without risking increased severity. (5) Other health-care patients (Non-Urgent) can wait to see a doctor within 1–4 hours². Simulation-Based Learning (SBL) is a method for developing nurses' learning and professional competence by having nurses assess patient scenarios, provide nursing care accordingly, and evaluate the practice outcomes. This helps reduce the risks of real-world practice and promotes the development of nursing practice skills³.

Phrapokklao Hospital has 755 beds and an actual capacity of 886 beds. The number of patients receiving services from 2022 to 2024 was 592,706, 597,801, and 595,790, respectively. Seven medical specialties were opened: Internal Medicine, Surgery, Orthopedic Surgery, Obstetrics and Gynecology, Pediatrics, Ophthalmology, and Otolaryngology. There were 56 registered nurses. In 2022, an incidence of urgent/worsening patient conditions was observed. In 2023, there were 7 cases (6 surgical, 1 internal medicine), and in 2024, there were 8 cases (2 surgical, 1 internal medicine, 1 ENT, 1 injection lab, 1 after-hours clinic, and 1 ophthalmology). A total of 12 cases (5 surgical, 2 internal medicine, and 4 ophthalmological) were assessed in 2021, with

a knowledge assessment of patient evaluation and triage showing a rate of 46.7 percent among professional nurses (meaning the criterion of 80 percent). From 2023 to 2025, the assessment results for the quality of nurse medical record-keeping in the area of patient assessment were 32.07, 52.94, and 37.03, respectively (criterion 85 percent). This indicates that nurses still lack knowledge, skills, and decision-making abilities. The incidence of patients' conditions worsening while waiting for examination is increasing every year. Therefore, the researchers aimed to develop a model to enhance the competencies of professional nurses through simulation-based learning in managing emergency situations for outpatients, using the PAOR process based on the concept of Kemmis and McTaggart⁴. To ensure patient safety and satisfaction, and to improve the quality of nursing care.

METHODS

This research is an action research study with the objective of developing and evaluating a model for enhancing the competencies of professional nurses through simulation-based learning in emergency management. Data were collected from January 2025 to December 2025. The project has passed the ethical review of human research by the Human Research Ethics Committee, Chanthaburi Province, under number CTIREC 122/67, approved January 13, 2025, and expired on January 12, 2026.

Population and sample

The population and sample consisted of registered nurses and outpatients. Of 52 registered nurses in the outpatient department, 49 were included in the sample, as the researcher and research assistants were excluded.

The outpatient sample size was calculated using G*Power 3.1.9.26 software program⁵. Set the test power value. (Power Analysis) At a significance

level (α value) of 0.05, the power of the test was 1.0, and the effect size was 0.5⁶. A two-tailed correlation between the variables under study was tested. The initial sample group size was 42 people. An additional 20% was added to account for data loss, bringing the total to 50 people. The sample group was selected using purposive sampling.

The inclusion criteria were registered nurses working in outpatient settings who voluntarily participated in the research, and outpatients with an SOS score of 2 points or higher. The exclusion criteria include patients with urgent conditions requiring emergency department referral, an SOS score of 4 points or higher, and vital signs and SOS values being assessed every 15–30 minutes⁷.

The research process consists of three phases.

Step 1: Preparation Phase To evaluate the situations, problems, and incidents by professional nurses in each examination room during emergency management. It reviews literature, concepts, theories, and best practices. The findings are then analyzed to identify problems and develop a model for developing the competencies of professional nurses in emergency management.

Step 2: Operational Phase A pilot test of the improved and implemented model with outpatient professional nurses using the PAOR process, based on the concept of Kemmis and McTaggart's⁴. This includes 1) Planning: Preparing for competency development, creating learning materials including knowledge tests, scenario examples, guidelines, and follow-up. 2) Action: Rotating through three simulated scenarios, with the researcher facilitating the activities. Participants are divided into roles as attending nurses and observers, and a debriefing session is conducted through group discussions. 3) Observation: Monitoring participants' behavior and role-playing during the practice. 4) Reflection:

Participants reflect on their learning outcomes after the simulated practice.

Step 3: Evaluation Phase Involves assessing the effectiveness of a model for developing professional nursing competencies through simulation-based learning in emergency management, using knowledge assessment forms, emergency management competency and decision-making assessment forms, and satisfaction assessment forms.

Research tools

1. Tools used in conducting the research. These include models for developing professional nurses' competencies through simulation-based learning. For managing emergency conditions in outpatient departments (simulation-based learning), the quality of the equipment was checked in two steps:

1.1 Check the content validity by three qualified experts. These include: 1) Emergency medicine physicians, 2) Nursing instructors. and 3) Specialized nurses in intensive care nursing. The content validity index (CVI) was increased to 0.7, which was correct as per the suggestion.

1.2 The feasibility of implementing the revised competency development model by pilot testing it with professional nurses. Surgical examination room: 4 people, not participants

2. The tools used for data collection included:

2.1 Knowledge Assessment Form: The form consists of 10 multiple-choice questions. The passing criterion is to answer correctly, at least 80 percent of the time, in accordance with Bloom's⁸, which indicates a high level of knowledge. Reliability was further evaluated through a test-retest with four surgical outpatient nurses. The test was repeated twice, one week apart, and the Pearson correlation coefficient was 0.9.

2.2 The assessment of competence and

decision-making was divided into two parts:

1) Assessing the ability to manage emergencies by having the assessor observe the behavior of the person being assessed.

2) An assessment of decision-making in managing emergencies consisting of two items, passing which requires at least 80% correct answers, using Bloom's⁸ criterion-referenced assessment. This indicates a high level of decision-making capability. The content validity of the instrument was checked by three experts. The values obtained were 1.0 and 1.0.

2.3 The satisfaction assessment form for professional nurses regarding the competency development model consisted of ten items, and a satisfaction assessment form. The patient care assessment for patients who received care in accordance with the competency development model comprises 10 items. A 5-level rating scale based on the Likert scale was used, 4.5-5.0. The score indicates the highest level of satisfaction. A score of 3.5-4.5 indicates a high level of satisfaction; 2.5-3.5 indicates a moderate level of satisfaction; 1.5-2.5 indicates a low level of satisfaction; and 1.0-1.5 indicates the lowest level of satisfaction. Content validity was assessed using the index. CVI equals the accuracy, which is determined by calculating Cronbach's alpha coefficient, with values of 0.7 and 1.0. The values obtained are 0.9 and 0.9.

Data analysis

1. Analyze general data using descriptive statistics, specifically frequency, percentage, mean, and standard deviation.

2. Analyze qualitative data. By content analysis.

3. Analyze the results of using the competency development model using percentages, means, and standard deviations.

RESULTS

A model for developing professional nursing

skills through simulation-based learning in emergency management was developed using the PAOR process, derived from Kemmis and McTaggart's concept. It comprises three simulated scenarios with varying situations, where the primary care nurse rotates through the roles, followed by a debriefing and group discussions.

General information on registered nurses

indicated that most were aged 36 or older, accounting for 81.6% (SD=0.5), and they had at least 11 years' work experience. The highest percentage, 83.7% (SD=0.4), reported experience managing emergency situations in outpatients; 79.6% had received training in critical care, whereas only 59.2% of registered nurses reported this experience. (Table 1)

Table 1 the Number and Percentage of General Information of Professional Nurses (n=49).

Personal factors	quantity	Percentage
Age (years)		
Below 30	2	4.1
30-35	7	14.3
36 and older	40	81.6
M=2.8 (SD=0.5)		
Educational qualifications		
Bachelor's degree or equivalent	46	93.9
Higher than a bachelor's degree.	3	6.1
Work experience (years)		
Less than 1	0	0
2-5	1	2.0
6-10	7	14.3
11 or more	41	83.7
M=0.8 (SD=0.4)		
Experience in managing emergencies.		
did not have	10	20.4
had	39	79.6
Training history in critical care for patients.		
non	20	40.8
had	29	59.2

A competency development model found that, after using the model, professional nurses' knowledge levels increased: the number and percentage of professional nurses who answered each question

correctly increased relative to the pre-model level, with the highest percentage at 100% (passing 4 questions). The percentages ranged from 65.3% to 93.9% (passing all 7 items). (Table 2)

Table 2 the Number and Percentage of Professional Nurses who Answered the Questions Correctly Before and After Using the Professional Nurse Competency Development Model Through Simulation-Based Learning in Emergency Management (n=49).

Knowledge in managing emergencies.	Before learning through simulations.		After learning through simulations.	
	Correct answer.	Interpret the	Correct answer.	Interpret the
	number	results.	number	results.
	(percentage)	According to the criteria.	(percentage)	According to the criteria.
Clause 1	49 (100.0)	Pass	46 (93.9)	Pass
Clause 2	29 (59.2)	Failed	32 (65.3)	Failed
Clause 3	37 (75.5)	Failed	37 (75.5)	Failed
Article 4	32 (65.3)	Failed	48 (98.0)	Pass
Article 5	38 (77.6)	Failed	48 (98.0)	Pass
Article 6	24 (49.0)	Failed	33 (67.3)	Failed
Article 7	48 (98.0)	Pass	48 (98.0)	Pass
Article 8	36 (73.5)	Failed	45 (91.8)	Pass
Article 9	41 (83.7)	Pass	43 (87.8)	Pass
Article 10	41 (83.7)	Pass	46 (93.9)	Pass

This study examines the effects of a competency-based development model on the abilities and decision-making skills required for managing emergencies. It was found that after implementing the competency development model, the number and percentage of professional nurses

who answered competence and decision-making in emergency management questions correctly were as follows. Item 1 increased from 22.4% to 44.9%, but still did not meet the criteria. For item 2, the percentage increased from 61.2% to 93.9%, meeting the criteria. (Table 3)

Table 3 the Number and Percentage of Professional Nurses who Answered Correctly Regarding Competence and Decision-Making in Managing Emergency Situations for Outpatients (n=49).

Knowledge in managing emergencies.	Before learning through simulations.		After learning through simulations.	
	It can be	Interpret the	It can be	Interpret the
	managed.	results.	managed.	results.
	number (percentage)	According to the criteria.	number (percentage)	According to the criteria.
Clause 1	11 (22.4)	Failed	22 (44.9)	Failed
Clause 2	30 (61.2)	Failed	46 (93.9)	Pass

This study examined the effects of using the competency development model on the satisfaction of professional nurses. The average satisfaction

level was high to very high across all items, ranging from 4.4 to 5.0. (Table 4)

Table 4 the Mean and Standard Deviation of Satisfaction Scores of Professional Nurses in Using the Competency Development Model (n=49)

Satisfaction	Average (M)	Standard deviation (SD)	Level
Issues related to format.			
Clause 1	4.4	0.7	a lot
Clause 2	4.4	0.7	a lot
Clause 3	4.5	0.7	a lot
Article 4	4.4	0.7	a lot
Article 5	4.5	0.6	a lot
Issues related to the content of the format.			
Article 6	4.4	0.6	a lot
Article 7	4.5	0.5	a lot
Article 8	4.4	0.7	a lot
Issues regarding the procedures for using the format.			
Article 9	4.4	0.6	a lot
Article 10	5.0	0.6	The most

From a study on the effects of using a competency development model on patient satisfaction. The findings showed that the average satisfaction level was high to very high for all items, with scores ranging from 4.2 to 4.6. (Table 5)

Table 5 the Average Values and the Standard Deviation of Patient Satisfaction Scores After Receiving Care According to the Competency Development Model (n=50).

Satisfaction	Average (M)	Standard deviation (SD)	Level
In terms of speed and safety.			
Clause 1	4.2	0.8	a lot
Clause 2	4.3	0.9	a lot
Clause 3	4.5	0.7	a lot
Article 4	4.5	0.6	The most
In terms of information and communication.			
Article 5	4.5	0.7	a lot
Article 6	4.3	0.8	a lot
Article 7	4.4	0.8	a lot
Regarding follow-up and post-treatment care.			
Article 8	4.4	0.7	a lot
Article 9	4.4	0.8	a lot
Article 10	4.6	0.6	The most

Based on three months of monitoring. No incidents of patient deterioration while waiting for service were identified.

DISCUSSION

This study aimed to develop and evaluate the effectiveness of a professional nursing competency

development model using simulation-based learning in emergency management. The objectives are discussed below:

Developed a competency development model that utilizes the PAOR process based on Kemmis and McTaggart's concept. It comprised three simulated scenarios with rotating roles of the attending nurse, followed by a review of the events and group discussions. Content validity was assessed by three experts and through a pilot test, which allowed nurses to practice, experiment, and solve problems in a manner that closely resembled real-world, urgent situations. This resulted in increased knowledge, skills, and satisfaction after using the model, consistent with findings reported by Somjit Sindhuchai and Kanyarat Ubolwan⁹. It was stated that learning through virtual simulations creates experiences that mimic real clinical situations, allowing learners to practice in a safe environment without risk to patients. Meanwhile, Sumonchat Duangbubpha and Suntree Chianwiwatthakij¹⁰ found that simulation-based learning enabled students to practice independently, observe their peers, and receive feedback from the research team, promoting both practical skills and systematic problem-solving abilities.

Developed a competency enhancement model, found that the knowledge of emergency management among professional nurses increased by 65.3% to 93.9% compared to before the use of the model. This indicates that the developed model incorporated learning components across three simulated learning stations, each with distinct scenarios, that participants rotated through until completion. It helps nurses apply it correctly to real-world situations, consistent with the study by Somjit Sindhuchai and Kanyarat Ubolwan⁹, which indicated that knowledge and skills gained from simulated experiences are more durable than knowledge acquired solely through lectures.

However, the assessment also revealed that some nurses did not meet the criteria for patient assessment. This can be explained by the fact that this knowledge requires memorization and consistent practice. Therefore, it is recommended that competency development be achieved through the inclusion of additional methodologies, such as increased on-the-job experience and training.

The competence and decision-making skills of professional nurses in managing emergencies, as shown in point 2, increased from 61.2% to 93.9%, meeting the criteria.

However, although point 1 increased from 22.4% to 44.9%, it still did not meet the criteria. This can be explained by the competency development model. Although the developed training involved completing a rotating series of simulated learning scenarios, it still required the use of experienced and trained critical care nurses. It was found that 20.4% of nurses lacked experience in emergency situations, and 40.8% had never received training in critical care. This aligns with Benner's theory of expertise development¹. This indicates that the development from novice to expert does not arise solely from theoretical knowledge; it also requires practical experience that helps develop clinical judgment skills, rather than relying on textbook rules. Furthermore, this aligns with the findings of Suparat Jamjang, Wirada Atthameetakul, Rattana Nil-iam, and Nataya Wongyara¹¹, who found that nursing students who learned through simulations had significantly higher scores in problem-solving ability and nursing practice.

Satisfaction of professional nurses who have received competency development. The average satisfaction level was high to very high for all items, ranging from 4.37 to 5.00. The model was developed through using simulations. That is specific. The procedure is clear. It is appropriate for the context, has been reviewed by experts, and has undergone testing, resulting in user satisfaction and continued

use. This is consistent with the findings of Sumonchat Duangbubpha and Suntree Chianwiwatthakij, 10 students in the nursing program. By evaluating the effectiveness of using clinical simulation-based teaching techniques in nursing practice. The students were satisfied with the use of simulations in teaching. Overall, it is at a high level.

Patient satisfaction with the care provided through the competency development program. The average satisfaction level was high to very high for all items, with scores ranging from 4.2 to 4.6. This can be explained by the fact that patients received care in accordance with the competency development model. There is confidence, safety, assessment, and monitoring of potential abnormalities. After three months of monitoring, no incidence of patient deterioration while waiting for service was observed. This is consistent with the study by Somjit Sindhuchai,

Kanyarat Ubolwan, and Sunee Boonsin,¹² which enrolled 69 nursing students, divided into an experimental group of 34 and a control group of 35 students. It was found that students who received instruction using simulated situations had significantly higher average scores in knowledge and self-confidence than their pre-intervention scores.

The research findings show that nurses have improved knowledge and skills in emergency management and are satisfied with the competency development model. This improves patient safety and satisfaction with the care system, thus enhancing the quality of nursing care, and helps to identify the training needs of professional nurses working in outpatient departments.

CONFLICTS OF INTEREST: None

FUNDING: None

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ORIGINAL ARTICLE

รูปแบบการพัฒนาสมรรถนะพยาบาลวิชาชีพโดยการเรียนรู้ผ่านสถานการณ์จำลอง ต่อการจัดการภาวะเร่งด่วนของผู้ป่วยที่มารับบริการกลุ่มงานการพยาบาลผู้ป่วยนอก โรงพยาบาลพระปกเกล้า

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บทคัดย่อ

ที่มาของปัญหา: อุบัติการณ์ทรุดลงของผู้ป่วยนอกระหว่างรอตรวจสามารถป้องกันได้ ด้วยระบบคัดกรองที่ดี ระบบเฝ้าระวัง และมีการพัฒนาสมรรถนะของพยาบาลในการประเมินและจัดการภาวะเร่งด่วน ด้วยรูปแบบการพัฒนาสมรรถนะที่เหมาะสมและมีประสิทธิภาพ การใช้สถานการณ์จำลองทำให้พยาบาลได้ฝึกปฏิบัติ ทดลอง และแก้ปัญหาได้ใกล้เคียงกับสถานการณ์จริง ส่งผลให้ผู้ป่วยปลอดภัย

วัตถุประสงค์: เพื่อพัฒนาและประเมินผลรูปแบบการพัฒนาสมรรถนะ

วิธีการศึกษา: เป็นวิจัยเชิงปฏิบัติการ กลุ่มตัวอย่าง ได้แก่ พยาบาลวิชาชีพ 49 คน ผู้ป่วย 50 คน วิจัยที่แผนกผู้ป่วยนอก รพ.พระปกเกล้า ระหว่างเดือนม.ค.-ธ.ค. 2568 เครื่องมือวิจัย คือ รูปแบบการพัฒนาสมรรถนะพยาบาลวิชาชีพ ใช้ผู้เชี่ยวชาญ 3 คน ความตรง 0.7 เครื่องมือเก็บรวบรวมข้อมูล คือ แบบสอบถามข้อมูลทั่วไป แบบประเมินความรู้ ความเที่ยง 0.9 แบบประเมินความสามารถ แบบประเมินความพึงพอใจของพยาบาลวิชาชีพและของผู้ป่วย ความเชื่อมั่น 0.9, 1.0, 0.9 ตามลำดับ โดยใช้สถิติ ร้อยละ ค่าเฉลี่ย และส่วนเบี่ยงเบนมาตรฐานวิเคราะห์ข้อมูล

ผลการศึกษา: ได้รูปแบบการพัฒนาสมรรถนะพยาบาลวิชาชีพโดยการเรียนรู้ผ่านสถานการณ์จำลอง จำนวน 3ฐาน ใช้บทบาทพยาบาลเจ้าของไข้แบบหมุนเวียนจนครบ ทบทวนเหตุการณ์ และอภิปรายกลุ่ม ผลการใช้รูปแบบฯ พบว่าความรู้ ผ่านเกณฑ์ เพิ่มขึ้นอยู่ในช่วงร้อยละ 65.3-93.9 ความสามารถในการตัดสินใจเพิ่มขึ้นจากร้อยละ 61.2 เป็น 93.9 ผ่านเกณฑ์ ความพึงพอใจของพยาบาลและผู้ป่วยอยู่ในระดับมาก ($M=4.5, 4.4$) ตามลำดับ ไม่พบอุบัติการณ์อาการทรุดลงหลังเฝ้าระวัง 3 เดือน

สรุป: รูปแบบการพัฒนาสมรรถนะฯ ส่งเสริมให้พยาบาลมีความรู้ ความสามารถ และการตัดสินใจจัดการภาวะเร่งด่วนได้ ส่งผลให้ผู้ป่วยปลอดภัย

คำสำคัญ: สมรรถนะพยาบาลวิชาชีพ, การจัดการภาวะเร่งด่วน, การเรียนรู้ผ่านสถานการณ์จำลอง