

Original articles

Content validity assessment of a CPR training program tailored to nursing needs in a general hospital

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Received: 15/04/2026; Accepted: 30/06/2026; Published: 25/08/2026

DOI: 10.34071/jmp.2026.4.1071

Abstract

Objective: This study aimed to identify the cardiopulmonary resuscitation (CPR) training needs of nursing staff from the perspective of key stakeholders and to evaluate the content validity of a competency-based CPR training package developed for a private hospital setting in Vietnam.

Methods: Using a two-phase mixed-methods approach, qualitative data were gathered through six in-depth interviews and three focus group discussions with hospital leaders and nurses to identify training needs. In the second phase, a CPR intervention package was developed and validated by 24 experts using the content validity indices (I-CVI and S-CVI/Average).

Results: The qualitative findings highlighted two key needs: moving beyond compliance-driven continuing medical education toward competency-based CPR training, and adopting flexible, repeated, department-specific training formats that address workload and shift constraints. The final training package comprised three components: modular knowledge and skills training (including simulation and Kiosk-CPR practice), on-site follow-up in clinical departments, and evaluation at multiple time points (pre-training, and 3- and 6-month follow-up). The five CPR competency domains showed excellent content validity (S-CVI/Average 0.97-0.99). The overall package achieved S-CVI/Average of 1.00 for relevance and 0.94 for necessity, exceeding recommended thresholds. Experts rated longitudinal monitoring (3-months and 6-month follow-up) as more necessary than one-time immediate post-course evaluation.

Conclusion: A locally adapted competency-based CPR training package for nurses was systematically developed and psychometrically validated in a private hospital. Strong expert agreement and the emphasis on long-term monitoring provide a robust foundation for future implementation and evaluation of effectiveness.

Keywords: Cardiopulmonary Resuscitation (CPR); Competency-Based Education; Nursing; Content Validity Index (CVI); Private Hospital.

1. INTRODUCTION

In clinical practice, cardiac arrest is widely recognized as one of the most critical and time-sensitive medical conditions that can occur in any hospital unit [1]. Therefore, cardiopulmonary resuscitation (CPR) is paramount, as it directly influences patient survival, neurological outcomes, and long-term prognosis [2]. Substantial evidence has consistently shown that high-quality CPR administered within the first few minutes of cardiac arrest has a greater effect on patient outcomes than many subsequent advanced resuscitation measures [3].

Given their continuous presence at the bedside, nurses are uniquely positioned to detect cardiac arrest early, initiate CPR promptly, and effectively coordinate with emergency responders [4]. Therefore, CPR competency, which encompasses knowledge,

practical skills, decision-making, communication, and teamwork, is regarded as an essential pillar of patient safety in hospital settings [5]. Despite its importance, this competency is not inherently durable and tends to decline over time unless it is maintained through regular training, practice reinforcement, and content updates [5, 6]. This decline in practical proficiency occurs substantially faster than the attrition of theoretical knowledge. Evidence indicates that clinical psychomotor skills can begin to deteriorate as early as two weeks after training, whereas theoretical knowledge retention typically begins to decline between one and six months after course completion [7, 8].

Implementing effective CPR training and clinical practice in low- and middle-income countries (LMICs) remains challenging despite the availability of

international guidelines. Specifically, these settings face critical resource constraints, such as shortages of specialized healthcare personnel, restricted budgets, inadequate infrastructure, and fragmented emergency response systems. Furthermore, existing CPR guidelines may not fully align with the contexts of LMICs, as they are predominantly developed within high-income healthcare systems and may not adequately address local clinical realities [9]. This issue is further compounded by the scarcity of standardized training materials, the shortage of qualified instructors, and the prohibitive costs associated with commercial training programs [10]. Consequently, there is an urgent need to develop training frameworks that are scientifically grounded in international guidelines and adapted to local clinical realities, resource constraints, and ongoing monitoring capacities.

Hung Vuong Hospital in Phu Tho Province is a large private general hospital with a growing patient population, including a substantial proportion of critically ill patients at risk of cardiac arrest. While standardizing and enhancing nurses' CPR competency aligns with the broader goals of improving the quality of care and patient safety, a scientifically validated, locally adapted, competency-based training package has not yet been developed either nationally or for this institution. Moreover, the training needs of the nursing staff at this hospital have not been systematically assessed, and no structured framework for evaluating the content validity of CPR training package has been established. In response to these gaps, this study was conducted to (1) identify the continuing CPR training needs of nurses from the perspective of relevant stakeholders and (2) evaluate the content validity of a competency-based CPR training package tailored to the identified needs for implementation in a private hospital setting in Vietnam.

2. SUBJECTS AND METHODS

2.1. Study Design

The study employed a two-phase, sequential mixed-methods design, incorporating both qualitative and quantitative methodologies. This approach facilitated a comprehensive examination of stakeholder perceptions and experiences, while ensuring a systematic evaluation of the content validity of the intervention package through expert appraisal.

2.2. Study setting

The study was conducted at Hung Vuong Private General Hospital in Phu Tho Province, Northern, Vietnam, established in 2010 and currently a large

tertiary private hospital with modern medical facilities and approximately 1,300 healthcare staff.

2.3. Study Subjects

Phase 1 (qualitative research): The study subjects were key stakeholders for in-depth interviews (IDIs) who is working at Hung Vuong Hospital, Phu Tho, including hospital leaders and management staff; focus group discussions (FGDs): representatives from functional departments and clinical departments; head nurses and nurses directly involved in patient care.

Phase 2 (Quantitative study: content validity evaluation of the intervention package):

Participants were experts with a minimum of five years of active professional experience in CPR-related fields. Inclusion criteria required: (1) professional qualification in resuscitation-emergency medicine, nursing, or medical education; (2) active clinical or instructional involvement in CPR practice or training; and (3) current affiliation with an accredited healthcare institution or academic body in Vietnam.

2.4. Sample and Sampling

A total of 33 participants were purposively recruited for the qualitative study, including six key informants who participated in IDIs and 27 healthcare professionals who participated in three FGDs.

A total of 30 experts in resuscitation from across Vietnam were invited to participate, of whom 24 completed the survey (response rate: 80.0%). Experts were recruited using purposive sampling through formal institutional invitations, peer recommendations, university, and existing professional networks.

2.5. Content and Variables

Phase 1: Qualitative study

Variables included: difficulties, limitations, and barriers in CPR practice at the hospital; Needs and priority levels for continuous CPR training activities for nurses;

Phase 2: Quantitative study

Step 2.1. development of the draft competency-based CPR training intervention package

Based on Phase 1 findings and previous narrative review, the research team designed a draft competency-based CPR training package. The package was structured around five CPR competency domains (Table 1): assessment and early recognition of cardiac arrest; Organization and coordination of resuscitation; implementation of CPR techniques (chest compressions, ventilation, AED use, and medication support under medical direction); evaluation and post-resuscitation monitoring; communication, teamwork, and crisis behavior.

Table 1. Mapping of five CPR competency domains with indicators and nursing competency frameworks

No.	CPR competency domain	Key indicators (examples from the tool)	Linkage with nursing competency framework/intervention package
1	Assessment and early recognition of cardiac arrest	- Ability to recognize cardiac arrest - Time to recognize cardiac arrest - Assessment of vital signs (pulse, breathing, consciousness, etc.) - Use of ECG/monitor/AED to support assessment - Identification of risk signs, use of assessment algorithms, and timely reporting of the patient's condition	Vietnam framework: Care, Communication, Lifelong learning; CanMEDS: Medical Expert, Communicator. Component 1 of the intervention package (<i>knowledge training - lectures, videos, pre- and post-tests</i>).
2	Organization and coordination of resuscitation	- Identifying problems that require intervention and prioritizing them - Determining the timing of interventions and assigning roles within the resuscitation team - Coordinating with other team members, using protocols/guidelines, and planning for special situations	Vietnam framework: Collaboration, Management; CanMEDS: Collaborator, Leader. Linked to program design, role assignment in simulations, and monitoring implementation at ward level. Component 2 (<i>on-site supervision</i>).
3	Implementation of CPR techniques	- Performing high-quality chest compressions (appropriate rate, depth, chest recoil, timing, and continuity) - Performing bag-mask ventilation - Accurate and timely use of the AED - Coordinating chest compressions and ventilations - Preparing and assisting with emergency medications; adhering to protocols for special situations and ensuring patient safety	Vietnam framework: Care, Technical-procedural skills; CanMEDS: Medical Expert. Main focus of hands-on practice on manikins/Kiosk-CPR - Component 1 (<i>simulation-based training with real-time feedback</i>).
4	Evaluation and post-resuscitation monitoring	- Monitoring clinical progress, assessing ROSC and changes in vital signs - Evaluating the effectiveness of each intervention - Detecting post-CPR complications (re-arrest, injuries, arrhythmias, etc.) - Making subsequent clinical decisions based on ongoing assessment	Vietnam framework: Care, Management; CanMEDS: Medical Expert, Scholar. <i>A 3-month and 6-month follow-up monitoring and repeated assessment in the intervention package</i> - Component 3.
5	Communication, teamwork, and behavior in crisis situations	- Communicating and reporting the patient's condition clearly (e.g. using SBAR) - Providing feedback and coordinating within the resuscitation team - Remaining calm, respectful, and supportive toward team members and relatives in emergencies - Maintaining professional and ethical behavior during CPR	Vietnam framework: Communication, Collaboration, Professional ethics; CanMEDS: Communicator, Collaborator, Professional. Embedded in simulation scenarios, group discussions, and debriefings - Components 1 and 2.

The package was designed with a competency-based training approach, focusing on nurses' core competencies in CPR, including assessment, planning, implementation, evaluation, and communication-teamwork. The intervention package consists of three main components: (1) Training to enhance CPR knowledge and practical skills; (2) Follow-up and monitoring of implementation in clinical departments; (3) Evaluation of training program effectiveness pre-post and follow-up after intervention.

Step 2.2. Development of content validity evaluation tool

The research team developed a survey questionnaire to evaluate the content validity of the content and intervention package based on the Content Validity Index (CVI) method. Each content item in the intervention package was evaluated according to two criteria: For suitability assessment, a 4-level scale was used, where items were considered relevant if scored 3 (quite relevant) or 4 (very relevant). For necessity assessment, a 3-level scale was applied, where items were considered essential if scored 1 (essential).

Step 2.3. Expert selection and evaluation

The intervention package was described in detail and accompanied by an evaluation form sent to 30 experts with experience in resuscitation-emergency medicine, nursing, and medical education, selected via purposive sampling for independent evaluation. Experts were requested to evaluate each content item of the content and intervention package according to the specified scales and provide feedback or suggestions for revisions. A total of 24 experts participated.

2.6. Data analysis

Qualitative Data Qualitative: data were fully recorded, transcribed, coded, and analyzed using thematic analysis. Key themes were synthesized and used as a scientific basis for developing the intervention package in Phase 2.

Quantitative Data: CVI analysis was used to evaluate the appropriateness and comprehensiveness of the contents in the competency-based CPR training intervention package through an expert panel. The I-CVI was calculated as the ratio of experts rating an item as relevant to the total number of participating experts. The S-CVI was determined using the S-CVI/Average method, by taking the average of the I-CVIs, reflecting the overall content validity of the intervention package. The 95% confidence interval of the S-CVI/Average was estimated using bootstrap with 5,000 replications to assess the accuracy and stability

of the estimates. An S-CVI/Average value ≥ 0.78 was considered acceptable content validity. Results were presented in tables illustrating S-CVI/Average values along with 95% confidence intervals. All data were analyzed using Python programming language.

3. RESULTS

The results are presented in two sections, with qualitative findings reported first, followed by quantitative results.

3.1. Result from qualitative study

A total of six key informants participated in the in-depth interviews (IDI1-6). Most participants were male (5/6), with a mean age of 44.8 ± 13.4 years (range: 32 - 69 years) and a mean of 10.3 ± 6.3 years of professional experience (range: 2 -16 years). In addition, three FGDs were conducted, comprising one group of head nurses (FGD1), one group of department heads (FGD2), and one group of staff nurses (FGD3), with a total of 27 participants. Of these, 48.2% were female. The participants had a mean age of 35.4 ± 5.2 years and a mean of 10.2 ± 4.2 years of professional experience.

Content analysis from all transcripts from IDIs and FGDs revealed a high perceived need for strengthening nurses' CPR competency and identified two major themes: (1) the need for a competency-driven CPR training approach beyond CME compliance, and (2) the need for a flexible, repeated, department-specific CPR training model.

Theme 1: A competency-driven CPR training approach is needed beyond current CME compliance

The CME system was described as relatively comprehensive in design and delivery, with CME hour requirements, regular CPR courses, and skills assessments tied to performance evaluations viewed by both leadership and nurses as mandatory to maintain.

CME ensures compliance but does not fully address real practice needs:

"We meet the CME hours, CPR courses are held every year, skills assessments are done but whether this has meaningfully improved practical competency outside of the clinical setting, I would say no." (Focus Group Discussion, FGD1)

However, participants argued that the current CME structure and format primarily ensure regulatory compliance (hours, certificates) without fully meeting the need for real-world CPR competency: content is spread too broadly, priorities are unclear, there is little differentiation between highly proficient and less proficient nurses, and CPR outcomes have not been deeply integrated into the

competency framework or the performance-based pay system (3P pay) as expected.

Most participants reported that the current training focuses on compliance with regulatory requirements rather than on developing the competencies required for clinical practice.

"We are doing well on the 'compliance' side: CME hours, certificates... but the real learning needs of nurses remain unmet, especially for key skills like chest compressions, bag-mask ventilation, and defibrillation." (In-depth Interview, IDI6)

As a result, CME is seen as necessary but insufficient to ensure nurses hospital-wide can perform CPR effectively in all clinical contexts.

All participants expressed the expectation that CPR competency should be integrated into the competency framework and linked to the 3P pay system:

"In the long run, CPR skills must be included in the competency framework, annual evaluations, and nurses' 3P salary - not remain a standalone course just to 'get a certificate.'" (In-depth Interview, IDI5)

Theme 2: The need for a flexible, repeated, department-specific CPR training model.

Many participants proposed a flexible and repeated CPR training model combining focused group sessions with regular self-practice opportunities, tailored to the typical clinical scenarios of each department.

3.2. Result from quantitative study

A total of 24 experts participated in this evaluation, a basic information of characteristics shows in Table 2.

Table 2. Characteristics of experts (n = 24)

Information	Frequency	Percentage
Gender (%)		
Male	18	75.0
Female	6	25.0
Age (years)	40.00±7.07	
Years of professional experience, min-max	12.33 ± 6.99	5-30

Table 2 shows information about twenty-four experts who participated in the evaluation process. The majority were male (75.0%). The mean age of participants was 40 years, and they had an average of 12.33 years of professional experience.

Table 3. Refinement of the CPR training package following expert review

Expert feedback during content validation	Revision incorporated into the final package
Increase opportunities for practical CPR skill training rather than relying primarily on lectures	Expanded simulation-based learning activities and Kiosk-CPR practice sessions within Component 1
Training content should reflect clinical situations commonly encountered in different departments	Added department-specific simulation scenarios and case-based discussions
CPR competency should be reinforced periodically because skills deteriorate over time	Added scheduled follow-up monitoring and reassessment activities

"If CPR were taught using simulation scenarios tailored to each department of obstetrics, pediatrics, trauma... nurses would find it much easier to relate to than generic training." (In-depth Interview, IDI3)

This suggested using simulation scenarios based on real departmental contexts, increasing hands-on practice time for chest compressions, bag-mask ventilation, and defibrillator/AED use, conducting short skill assessments every 3 - 6 months, and deploying mobile CPR kiosks allowing nurses to self-practice in 10-15 minute sessions during free time rather than relying solely on after-hours classroom training.

The need for regular self-practice on CPR kiosks:

"CPR kiosks would let us use 10 or 15 free minutes to practice compressions, ventilation, and defibrillation... that's more practical than waiting for a full training session." (Focus Group Discussion, FGD3)

Repeated, concise training focused on key skills:

"In my view, every three to six months there should be a short CPR refresher or assessment focusing on chest compressions, bag-mask ventilation, and defibrillator use - rather than a long course once a year." (In-depth Interview, IDI6)

This model expected to help narrow the gap between nurses' CPR competency on paper and their competency in actual emergency situations, while reducing time and staffing pressure for both nurses and the hospital.

Monitoring should occur within clinical departments to support transfer of learning into practice	Strengthened Component 2 through on-site supervision and implementation monitoring
Program effectiveness should be evaluated beyond post-training outcomes	Incorporated longitudinal evaluation at follow-up time points within Component 3

Following the development of the draft intervention package, qualitative feedback from the expert panel was collected to refine the content and implementation strategy. Several modifications were made based on expert recommendations, including the expansion of simulation-based learning activities, integration of department-specific CPR scenarios, enhancement of on-site monitoring mechanisms, and incorporation of long-term follow-up assessments. These revisions improved the alignment of the intervention package with the identified training needs and competency-based educational principles. In brief, opinions of expert feedback and corresponding revisions are presented in Table 3.

Table 4. Summary of content validity indices for the CPR competency domains and training package

Scale/Component	Type of items evaluated	No. of items	S-CVI/Ave (Relevance)	95% CI (S-CVI/Ave)
P11 - Assessment/ Early recognition	CPR competency items (domain 1)	10	0.97	0.95 - 0.99
P12 - Planning/Organization	CPR competency items (domain 2)	10	0.98	0.96 - 0.99
P13 - Implementation	CPR competency items (domain 3)	12	0.99	0.97 - 1.00
P14 - Evaluation	CPR competency items (domain 4)	12	0.98	0.97 - 0.99
P15 - Communication & teamwork	CPR competency items (domain 5)	12	0.99	0.98 - 1.00

Table 4 show the content validity of five CPR competency domains with S-CVI/Average values ranging from 0.97 to 0.99. Most individual items within these domains had I-CVI values ≥ 0.92 .

Table 5. Summary of content validity indices for training organization (P2) and knowledge content (P3)

Scale/ Component	Type of items evaluated	No. of items	S-CVI/Ave (Necessity)	95% CI (S-CVI/Ave)
P2 - Training organization	Items on training format, logistics and organizational support (e.g. number of sessions, timing, venue, format, perceived training needs)	9	0.87	0.83 - 0.92
P3 - CPR knowledge	Items assessing theoretical knowledge of CPR guidelines, algorithms, and technical principles	20	0.84	0.81 - 0.88

Table 5 shows the content validity of the groups related to training organization (P2) and knowledge content (P3) achieved S-CVI/Average of 0.87 and 0.84, respectively.

Table 6. Summary of content validity indices for the three components of the CPR intervention package

Sub-scale / Component	Focus of items	S-CVI/Ave (Suitability)	95% CI (Suitability)	S-CVI/Ave (Necessity)	95% CI (Necessity)
Q1 - Component 1: Training (modules)	Structure and content of modular CPR knowledge and skills training (lectures, video, simulation, Kiosk-CPR practice)	1	1.00 - 1.00	0.97	0.96 - 1.00

Q2 - Component 2: Follow-up & monitoring	On-site supervision and monitoring of CPR practice in clinical departments	1	1.00 - 1.00	0.91	0.91- 0.91
Q3 -Component 3: Evaluation framework	Pre-, immediate post-, and long-term (3- and 6-month) evaluation of CPR knowledge and skills	1	1.00 - 1.00	0.91	0.83 - 0.96
All		1	1.00 - 1.00	0.94	0.89 - 0.97

At the level of the intervention package, global S-CVI/Average was 1.00 for relevance and 0.94 for necessity (Table 6).

4. DISCUSSION

CPR training needs

This mixed-methods study showed that, despite an established CME system and annual CPR courses, key stakeholders perceived a clear gap between regulatory compliance and actual CPR competency among nurses. Qualitative data highlighted two consistent themes: the need to move beyond CME-driven training toward a competency-based approach, and the need for flexible, repeated, department-specific training models that can be integrated into busy clinical schedules.

An important finding of this study was the consistency of perceptions across multiple stakeholder groups. Hospital leaders and management emphasized the need to align CPR competency with institutional quality indicators, competency frameworks, and performance-based evaluation systems. In contrast, department heads, chief nurses, and frontline nurses highlighted operational barriers, such as workload pressures, rotating shifts, and limited opportunities for deliberate practice. Despite their different roles, all stakeholder groups identified a common gap between compliance-oriented training activities and actual CPR competency requirements. This convergence of strategic and frontline perspectives strengthens the credibility of the identified training needs and supports the feasibility of implementing a hospital-wide competency-based CPR training model. These perceptions align with international evidence that traditional, infrequent lecture-based CPR courses have limited effects on long-term psychomotor performance. A prospective cohort study reported that CPR psychomotor skills, particularly those related to chest compressions, often decline rapidly within 3 to 6 months-after training, with the trajectory of practical skill loss being faster and more pronounced than the corresponding decline

in theoretical knowledge [11]. Systemic barriers are central to this pattern of skill decline. Although continuing education certification is a mandatory requirement for maintaining practice licensure, our qualitative findings indicate that workload demands and staff shortages are the most prominent obstacles to nurses' consistent participation in training. This mirrors a globally recognized challenge, whereby excessive workloads, rotating shift schedules, and insufficient organizational support for dedicated training time are cited as the predominant barriers to nurses' participation in continuing education [12]. Consequently, these findings suggest that traditional periodic training models, characterized by prolonged duration, theoretical focus, and limited practical integration may no longer suffice to meet the evolving patient safety requirements.

To respond to the expressed need for more practical, department-specific, and repeated training, Component 1 of the package focused on modular, simulation-based learning and deliberate practice using manikins and the Kiosk-CPR system. Evidence indicates that simulation-based CPR training, particularly when combined with feedback devices and repeated refresher sessions, improves both skill acquisition and retention compared with traditional didactic approaches [13]. Simultaneously, the curriculum was divided into short, high-impact modules that could be scheduled around shifts instead of being delivered as multiday blocks, addressing workload and staffing constraints [7]. Component 2 (on-site follow-up and monitoring at the ward level) and Component 3 (pre-, and 3- and 6-month evaluations) were designed to narrow the gap between classroom learning and bedside practice. This structural design directly addresses the primary systemic barriers associated with workload demands and rotating shift pressure. Rather than requiring prolonged multi-day training sessions that

could compromise hospital staffing, the package was organized into modular, high-impact instructional units [6, 14].

Psychometric evaluation and content validation

Psychometric evaluation demonstrated excellent content validity of the five CPR competency domains (S-CVI/Average 0.97 - 0.99) and of the overall intervention package (S-CVI/Average 1.00 for relevance and 0.94 for necessity) [15]. Of particular interest was the differential pattern observed in the I-CVI scores across evaluation-related items. Although these data are not presented in the Results section, additional item-level analyses revealed that the item “evaluation immediately after course completion” received a lower necessity I-CVI score (0.83), whereas “3-month periodic monitoring” and “6-month follow-up comparison” achieved higher scores (0.96). This discrepancy, grounded in the experts’ clinical knowledge and experiential judgment, may reflect the nature of clinical skill deterioration. As supported by the literature, the enduring value of a CPR training program is not determined solely by short-term knowledge retention at course completion but also by the sustained precision of high-quality CPR skills, particularly the quality of chest compressions, over the months following -training [14]. Accordingly, the integration of continuous monitoring and long-term evaluation components within the intervention package is a critical feature that helps bridge the gap between theoretical learning and real-world clinical implementation.

The convergence of stakeholder-identified needs, international evidence, and strong content-validity metrics suggests that a locally adapted competency-based CPR training package is a feasible and promising strategy for improving nurses’ CPR competency in private hospitals in Vietnam and similar settings. The key features of this package include its competency-based structure, simulation and Kiosk-CPR practice, flexible modular delivery, and integrated long-term monitoring may serve as useful design principles for other institutions seeking to enhance CPR training beyond regulatory compliance. However, this study had some limitations. It was conducted at a single private hospital, and expert validation, while rigorous, does not replace empirical evaluation of the effectiveness of the training package on nurses’ performance and patient outcomes.

5. CONCLUSION

This study demonstrated that a locally adapted, competency-based CPR training package for nurses

was systematically developed and psychometrically validated in a large private general hospital in Vietnam. Grounded in a mixed-methods needs assessment and aligned with both international CPR guidelines and the Vietnamese Nursing Competency Standards, the three-component intervention, comprising modular knowledge and skills training (including simulation and Kiosk-CPR), on-site departmental follow-up, and multi-time-point evaluation, was structured around five CPR competency domains and achieved excellent content validity, with S-CVI/Average values of 0.97 - 0.99 for the domains and 1.00 (relevance) and 0.94 (necessity) for the overall package. These findings provide a robust foundation for pilot implementation and future studies assessing the impact of the training package on nurses’ CPR performance and patient outcomes, such as the return of spontaneous circulation and survival with favorable neurological outcomes.

Conflicts of interest: The authors declare no conflicts of interest

Ethics Approval: The study was conducted with the approval of the hospital Board of Directors and the relevant departments. The research protocol was submitted to and approved by the Ethics Committee in Biomedical Research of 361/2025/YTCC-HD3.

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