BMC Nursing

RESEARCH

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Enhancing nurses' self-efficacy in peer support for second victims through simulation training: a randomised controlled trial

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Abstract

Background Patient safety incidents can cause emotional and psychological distress among healthcare professionals, known as second victims. Although peer support programmes are recommended, evidence on structured training for peer supporters remains limited. This study aimed to examine the effectiveness of an actor-based simulation training programme in enhancing nurses' self-efficacy to provide peer support for second victims.

Methods A randomised controlled trial with multiple-methods evaluation was conducted in two general hospitals in South Korea. Participants were stratified by hospital and professional role and randomised to intervention (lecture and actor-based simulation) or control (lecture only). Self-efficacy was assessed at four time points (baseline, post-lecture, post-simulation, and one-week follow-up) using a validated scale. Quantitative data were analysed using linear mixed-effects models and ANCOVA, and qualitative data were collected from focus group discussions with 16 intervention participants.

Results Of the 104 nurses were randomised, 97 completed the study (47 intervention, 50 control). Self-efficacy increased after lecture-based education in both groups, but only the intervention group demonstrated further improvement after simulation, sustained at follow-up (group × time interaction, $p = .025$). ANCOVA confirmed higher post-simulation scores in the intervention group compared with controls ($p = .003$). Participants reported high satisfaction (Mean = 4.31) and emphasised greater awareness of the second victim phenomenon, enhanced empathic communication, and the need for continuous training.

Conclusions Actor-based simulation training significantly improved nurses' self-efficacy in supporting second victims beyond lecture-based education. These findings suggest that actor-based simulation is an effective educational strategy for preparing peer supporters, and integration into formal hospital policies and ongoing staff development programmes is recommended.

Trial registration Clinical Research Information Service (CRIS) KCT0009977. Retrospectively registered on July 11 2024.

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Keywords Second victim, Peer support, Simulation, Actor-based training, Nurse education, Randomised controlled trial

Background

Patient safety incidents can cause harm to patients, their families, and healthcare professionals. Those healthcare professionals who are harmed as a result of patient safety incidents are referred to as second victims [1]. Second victims may experience emotional distress, such as guilt, anger, frustration, stress, and fear, alongside physical symptoms, including insomnia, as well as maladaptive behavioural responses, such as alcohol misuse or suicidal ideation [2, 3]. Some second victims may even consider leaving their profession [4, 5]. Although accurately determining the incidence or prevalence of the second victim phenomenon due to the variations in symptom presentation is challenging [6], the estimated frequency of adverse events suggests that most healthcare professionals will encounter such incidents during their careers and may experience associated harm [7, 8].

Experiences with patient safety incidents can leave a lasting professional and social stigma, such as fear of negative judgement from colleagues, loss of professional reputation, and feelings of shame or self-doubt about one's clinical competence, regardless of professional role, clinical experience, or gender [3, 9]. Therefore, appropriate support and assistance for second victims are essential. Importantly, second victims who continue providing patient care without adequate recovery are at greater risk of being involved in repeated safety incidents, highlighting the need to address second victim support as an organisational issue rather than an individual concern [4, 5]. In response, several initiatives are now being implemented worldwide to support healthcare professionals' recovery from trauma, including peer support programmes and referral to external professional referral services [10, 11]. Additionally, practical administrative support systems should be available, encompassing psychological support, training in communication following incidents, and legal consultation to address potential medical litigation [9, 12].

Among the various strategies to support second victims, peer support programmes are the most widely implemented [13, 14]. This prominence arises because empathy and emotional exchange offered by colleagues with shared clinical experiences can alleviate feelings of isolation and shame, promoting psychological stability and recovery [15–17]. However, despite these benefits, relatively few studies have rigorously evaluated their effectiveness across multiple dimensions [11]. A particular challenge is that many existing programmes do not clearly distinguish between programme delivery and peer-supporter training, which leads to ambiguity in evaluation and undermines validity. Furthermore, there is limited evidence regarding the content and structure of training, specifically the theoretical and practical elements to be included and how these components contribute to outcomes. These gaps hinder the development and dissemination of more effective peer support programmes.

In this study, we developed and evaluated a peer-supporter training programme specifically targeting nurses, who represent a high-risk group among second victims, and assessed their self-efficacy in communication with second victims. To strengthen the validity of outcome evaluation, we adopted a randomised controlled trial design and distinguished between lecture-only education and lecture followed by simulation-based training to assess the independent effects of each. The simulation training incorporated professional actors to recreate realistic clinical interactions. In addition to measuring self-efficacy, we conducted focus group discussions to examine the clinical applicability of the training. Through this multifaceted approach, the study presents a standardised peer-supporter training programme and highlights essential prerequisites for its successful implementation.

Methods

Design

This study employed a randomised controlled trial to evaluate the effectiveness of an actor-based simulation training programme aimed at enhancing nurses' self-efficacy in providing peer support for second victims. Given that the concept of second victim is relatively unfamiliar to Korean nurses, both groups received lecture-based education to establish foundational knowledge. The intervention group additionally received simulation training. This design allowed us to examine the additional effect of simulation training beyond lecture-based education. The design and reporting adhered to the Consolidated Standards of Reporting Trials (CONSORT) guidelines [18].

Setting and participants

The study was conducted at two hospitals in South Korea: one tertiary and one general hospital. Participants were recruited separately from two strata within each institution, comprising nurse managers and staff nurses. Inclusion criteria were as follows: (1) currently employed in a clinical department as a registered nurse and (2) voluntary agreement to participate after receiving a complete explanation of the study purpose and procedures.

The required sample size was conservatively estimated using G*Power 3.1 [19] for a two-tailed independent t-test with a medium effect size (d = 0.50), significance level of 0.05, and power (1-β) = 0.90. This indicated a minimum of 86 participants. To account for potential attrition and stratification by hospital and professional role, 108 nurses were recruited, of whom 104 were randomised.

Randomisation

Randomisation was conducted separately within each hospital and professional role stratum. For each stratum, participants were assigned a random number using the RAND function in Microsoft Excel and ranked in ascending order. The first half of each ordered list was allocated to the intervention group, and the remainder was allocated to the control group. This procedure was predefined and applied consistently, minimising the risk of investigator bias and ensuring fair allocation.

Intervention

The intervention programme was developed using the Analysis, Methods, Development, Implementation, and Evaluation (ADDIE) instructional design model [20].

Analysis

A needs assessment was conducted with 76 healthcare professionals to identify priorities for programme content and delivery (Supplementary Table 1). Based on these findings, the programme was structured to strengthen peer-supporters' ability to assist colleagues affected by patient safety incidents, with the specific aims of preventing trauma, facilitating recovery, and minimising difficulties in clinical practice.

Design

Drawing on the analysis findings, the programme comprised a 2-hour lecture and a 3-hour simulation (Table 1). The lecture addressed a comprehensive understanding of patient safety and the second victim phenomenon, alongside related support strategies. The simulation included empathic communication and emotional support skills training, followed by actor-based role-play using real patient safety incidents, and concluded with debriefing and feedback to encourage reflection and consolidate learning.

Table 1 Components of the training programme

Type	Content	Time
Lecture	Comprehensive understanding of patient safety	60 min
	Second victim phenomenon and support strategies	60 min
Simulation	Empathic communication and emotional support skills training	90 min
	Actor-based role-play using real cases	50 min
	Debriefing and feedback from role-play session	50 min

Development

Two healthcare experts specialising in patient safety and one counselling expert were selected as instructors, and they developed educational materials for the lecture and simulation. Role-play scenarios were created based on cases reported in the Korea Patient Safety Reporting and Learning System [21] and a study that analyzed court judgments related to medical litigation cases [22]. The recruited actors were trained to portray second victims during role-play exercises. To ensure role fidelity and performance consistency, they received approximately three hours of structured preparatory training, including an overview of patient safety, the second victim phenomenon, and clinical context derived from the scenario scripts, as well as rehearsal to ensure consistency in emotional expression and role performance across simulation sessions.

Two pilot tests were conducted to refine the programme. The first involved three experts in medical and health sciences, who provided written feedback on the objectives, educational topics, goals and rationale, content, and delivery methods. The second pilot included 28 healthcare professionals across five groups, during which self-efficacy and satisfaction with the programme were evaluated before and after participation. Findings from both pilots were integrated into the final programme design.

Implementation

The final version of the programme was implemented with nurses randomised into intervention and control groups. The intervention group completed the lecture and simulation components over a two-week interval, while the control group participated in the lecture only. Delivering the lecture to the control group ensured a comparable baseline of knowledge across participants and enabled the specific effects of simulation training to be isolated.

The simulation training comprised role-play exercises with professional actors, during which each participant engaged once as a peer supporter and once as an observer, with 20 min allocated for each role. Following the role-play, a debriefing session was held and included feedback from the actors, allowing participants to reflect on their strengths and areas for improvement and consider effective communication and emotional support strategies. After the intervention, the control group also received simulation training to maintain ethical balance.

Evaluation

Programme outcomes were assessed using a multiple-methods approach, combining quantitative measures of self-efficacy with qualitative exploration of training experiences. Further methodological details are provided in subsequent sections.

Outcomes

Self-efficacy for supporting second victims was measured using selected subscales -self- efficacy for counselling skills and counselling attitudes- of the Counsellor's Self-Efficacy Scale (CSES) [23]. For this study, the term 'client' in the original instrument was replaced with 'second victim'. The counselling skills subscale comprised 19 items assessing confidence in using counselling intervention techniques, and the counselling attitude subscale comprised 13 items assessing confidence in adopting the attitudes required to support second victims effectively. All items were rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), with higher scores reflecting greater self-efficacy. The original instrument reported a Cronbach's α score of 0.960. In this study, Cronbach's α across the four measurement points ranged from 0.892 to 0.932, indicating high internal consistency.

To explore participants' experiences in depth, a semi-structured interview guide for the focus group discussions was developed based on a review of previous studies [9], findings from pilot implementation, and subsequent discussions within the research team. Key questions explored participants' perceived changes in awareness of the second victim phenomenon, overall experiences of programme participation, experiences of applying the programme in clinical practice, and perceived strengths and areas for improvement.

Data collection

The self-efficacy survey was administered to the intervention and control groups at four time points: one week prior to the lecture-based education (T1, baseline), immediately after the lecture (T2), immediately after the simulation training for the intervention group (T3), and one week after the simulation training (T4). At each point, data were collected within a one-week period. Programme satisfaction was assessed in the intervention group immediately after the simulation training.

Focus group discussions were conducted with a subset of participants from the intervention group. Selection followed the same recruitment procedures as the main study. Eight participants from each institution were randomly selected from those who completed the intervention and agreed to participate in the focus group discussions, with four alternates identified in case of scheduling conflicts. In total, 16 participants (organised into four groups of four) took part in the sessions. These were held two weeks after the simulation in one hospital and five weeks after in the other, depending on site-specific scheduling. The research team continued discussions until no new meaning units or categories relevant to the research question were identified, and theoretical saturation was considered reached after four sessions.

Data analysis

Quantitative data were analysed using SPSS Statistics version 29.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics, chi-square tests, and independent t-tests were performed to examine group homogeneity in participants' general characteristics. Self-efficacy, identified as the primary outcome variable, was measured at four time points (T1–T4). A linear mixed-effects model (LMM) was applied to evaluate the effects of group, time, and the group × time interaction. Paired t-tests were employed to assess within-group changes across time points, and analyses of covariance (ANCOVA) were conducted to examine between-group differences at specific time points. Effect sizes were reported using Cohen's d and partial η^2, with statistical significance defined as a two-tailed $p < .05$.

Qualitative data from focus group discussions were analysed using conventional content analysis [24]. Two researchers (EYC and JP) independently reviewed the four transcribed focus group discussions line by line to extract meaning units. One researcher synthesised and consolidated the extracted meaning units, which were then reviewed by the second researcher. Based on the agreed meaning units, one researcher conducted categorisation to identify participants' core experiences, and the second researcher verified this process. Categorisation was conducted in three stages: (i) 326 meaning units were organised and grouped into similar experiences; (ii) subcategories were generated by clustering common experiences; (iii) higher-level categories were derived by examining temporal and contextual relationships among the subcategories.

Ethical considerations

This study received approval from the Institutional Review Board of XXXX Hospital (IRB No. XXXXXX). All participants provided written informed consent after receiving a full explanation of the study's purpose, procedures, assurances of confidentiality, and the voluntary nature of participation. The study was conducted in line with the ethical principles outlined in the Declaration of Helsinki.

Results

Participants

Recruitment and allocation

A total of 108 nurses were initially screened for participation, of whom 4 could not take part due to work schedules. Ultimately, 104 nurses were randomised, with 53 allocated to the intervention group and 51 to the control group. In the intervention group, 49 participants completed the assigned lecture and actor-based simulation training, while 4 could not attend because of scheduling conflicts. Two further participants declined to complete the post-intervention survey, leaving 47 included in the final analysis. In the control group, 50 participants attended the assigned lecture, while 1 participant could not participate due to work schedules. No further attrition occurred, resulting in 50 participants included in the final analysis (Fig. 1).

Baseline characteristics

A total of 97 participants were included in the final analysis, comprising 47 in the intervention group and 50 in the control group. Most were female (97.9% in the intervention group and 100.0% in the control group), and the most common age group was 40–49 years (57.4% and 44.0%, respectively). Most participants had more than 10 years of nursing experience (74.5% in the intervention group and 79.6% in the control group). Regarding motivation for participation, voluntary interest was more frequently reported in the intervention group (45.5%), whereas external recommendation was predominant in the control group (72.3%). Hospital type and position were stratified during recruitment to ensure balanced distribution, and no statistically significant differences were identified between the two groups in any general characteristics (Table 2).

Programme outcomes

Self-efficacy scores over time

As shown in Fig. 2, self-efficacy scores measured at four time points, from baseline to one week after training, changed in both groups. At T1, the mean score was 3.38 in both groups. At T2, scores increased (3.67 in the intervention group and 3.57 in the control group). At T3, the intervention group rose further to 3.79, while the control group declined to 3.52. At T4, the intervention

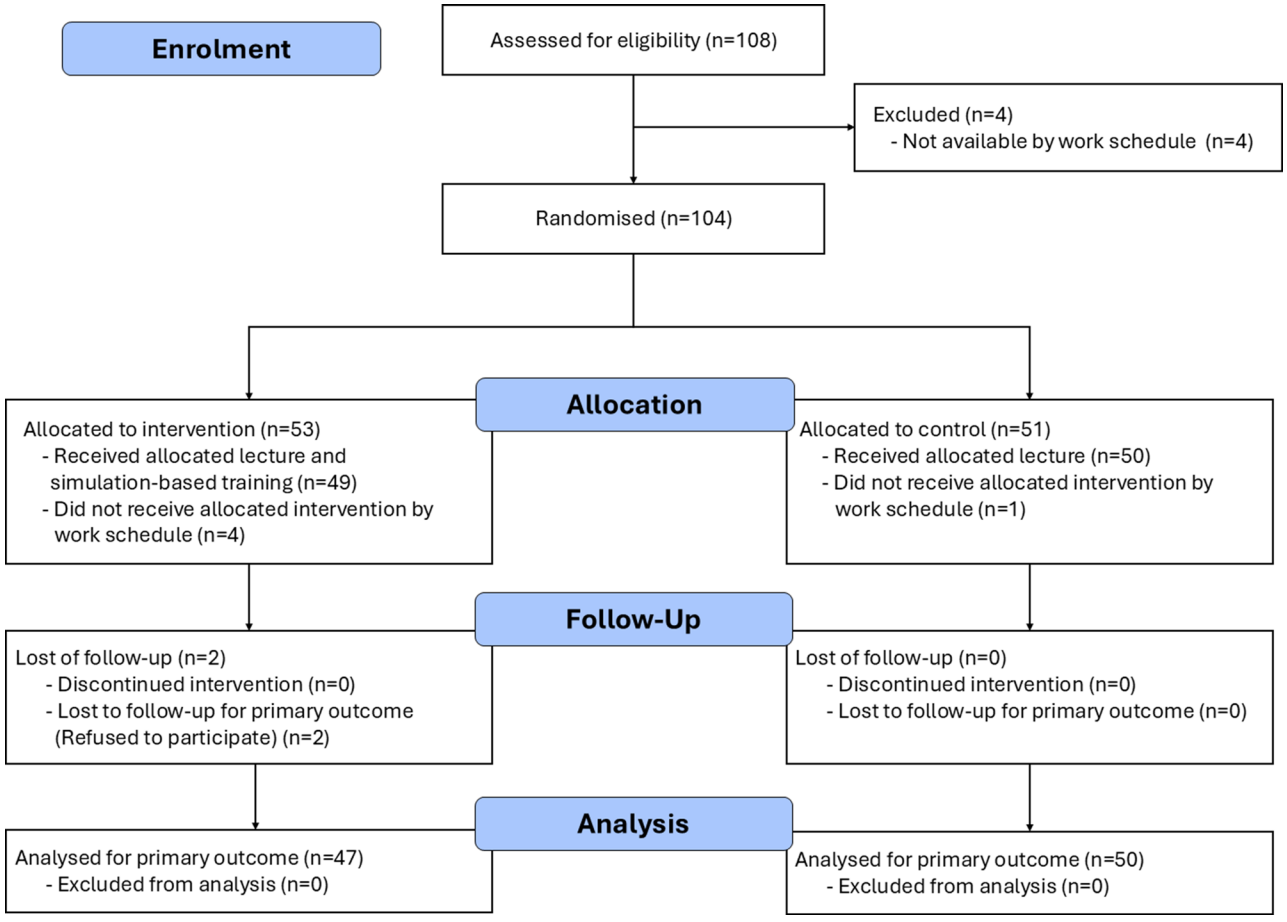

Fig. 1 Participants flowchart

Table 2 Participants characteristics (*N* = 97)

Characteristics	Intervention (*n* = 47)		Control (*N* = 50)		χ^2	*P* value
	n	%	*n*	%		
Gender						
Male	1	2.1	0	0.0	1.075	0.485
Female	46	97.9	50	100.0		
Age group						
≤ 29 years	2	4.3	2	4.0	1.905	0.592
30–39 years	12	25.5	18	36.0		
40–49 year	27	57.4	22	44.0		
≥ 50 years	6	12.8	8	16.0		
Type of Hospital						
Tertiary	26	55.3	28	56.0	0.005	0.946
General	21	44.7	22	44.0		
Position						
Nursing manger	24	51.1	21	42.0	0.8	0.371
Staff nurse	23	48.9	29	58.0		
Nursing experiences [1)]						
< 5 years	5	10.6	4	8.2	0.363	0.834
5–9 years	7	14.9	6	12.2		
≥ 10 years	35	74.5	39	79.6		
Department						
Ward	23	48.9	24	48.0	0.558	0.757
Special unit	18	38.3	17	34.0		
Administration	6	12.8	9	18.0		
Motivation for participation [2)]						
Voluntary interest	20	45.5	13	27.7	3.113	0.078
External recommendation	24	54.5	34	72.3		

1) missing data: 1 (1 control group)2) missing data: 6 (3 intervention group, 3 control group)

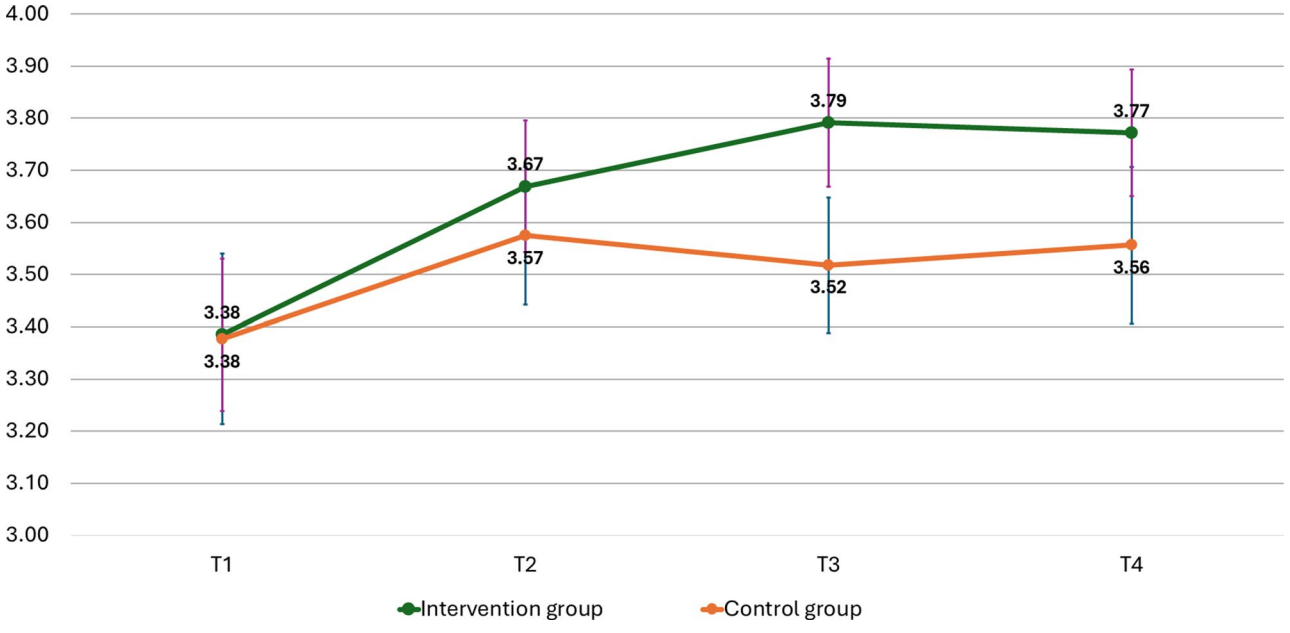

Fig. 2 Group comparison of self-efficacy across four time points

Table 3 LMM analysis of group, time, and interaction effects on self-efficacy

Group	Estimate (β)	95% CI (Lower, Upper)	t	*P* value
	-0.02	**(-0.26, 0.22)**	**-0.17**	**0.862**
Time	0.03	(-0.01, 0.07)	1.28	0.204
Group x Time	0.07	(0.01, 0.13)	2.26	0.025
Type of Hospital	-0.03	(-0.19, 0.13)	-0.41	0.682
Position	-0.15	(-0.31, 0.01)	-1.87	0.065

Abbreviation: CI, confidence interval; LMM, Linear mixed-effects model

group remained higher at 3.77, while the control group increased slightly to 3.56 (Supplementary Table 2).

Interaction effect of group and time

An LMM was applied to compare repeated self-efficacy scores across time points (Table 3). Hospital type and position, stratified at recruitment, were included as covariates. Although the main effects of group and time were not significant (p = .862 and p = .204), the group × time interaction was significant (β = 0.07, 95% CI [0.01–0.13], p = .025).

Effect of simulation training

An analysis of covariance (ANCOVA) on T3 scores, with T2 scores as a covariate, showed a significant group effect (F = 9.47, p = .003). The partial η^2 was 0.092, indicating a medium effect size (Supplementary Table 3). Maintenance of the simulation effect was evaluated by comparing T3 and T4 scores within the intervention group, with no significant difference observed (Mean difference = −0.02 ± 0.25, 95% CI [–0.01, 0.22], t = −0.53, p = .596) (Supplementary Table 4).

Effect of lecture-based education

For lecture-based education, comparisons between T1 and T2 showed significant improvements. In the intervention group, scores increased by 0.28 (t = 3.54, p < .001), while the control group increased by 0.20 (t = 2.87, p = .006) (Supplementary Table 4).

Programme satisfaction

The overall mean score for training satisfaction was 4.31 (SD = 0.45), with all items scoring above 4.1, indicating high satisfaction. The highest-rated items were 'The facilitator ensured the training process was conducted smoothly' (M = 4.45) and 'The learning objectives were clearly presented' (M = 4.43). Negative responses were rare, ranging from 0% to 2.3% across all items (Supplementary Table 5).

Qualitative findings

Focus group discussions with a subset of participants identified four key themes: (1) enduring the challenges of patient safety incidents, (2) stepping forward as peer supporters through new forms of training, (3) preparing to move forward through reflection after training, and (4) anticipating the expansion and improvement of peer supporter training (Supplementary Table 6).

Participants reported first becoming aware of the concept of the 'second victim' through lecture-based education. Most had not previously recognised that healthcare professionals could themselves be affected by patient safety incidents, and many reflected on personal experiences of distress after such events, which they had formerly regarded as an inevitable part of being a clinician. After gaining this awareness, participants expressed greater empathy for the vulnerabilities and challenges faced by second victims.

> *I felt a heavy sense of responsibility for harming a patient because of my mistake. …*
> *I had never thought that healthcare providers themselves could also become victims of patient safety incidents. Group 1*

The actor-based simulation training was described as realistic and emotionally demanding, yet it promoted deep engagement. Participants reported that the training highlighted gaps in their ability to fulfil the peer-supporter role. The training process also prompted many to reconsider how they had supported colleagues in the past, leading them to identify areas for improvement.

> *During the simulation training, we spent a lot of time learning that in certain situations it's better to express things in a particular way. Through that process, when I reflected on the words, tone, and intonation I had used before, I realized that although I didn't mean it that way, others might have interpreted it differently. It made me reflect on myself. Group 2*

Specifically, participants indicated that after the training, they became more mindful of language use, more attentive to recognising emotions, and more deliberate in listening actively to colleagues. They reported applying these changes in their clinical interactions. Simultaneously, some acknowledged that empathic communication remained challenging in practice. They emphasised the need for stepwise, repeated training across professional groups and suggested further refinement of simulation scenarios to better reflect clinical realities.

> *In the past, when a colleague experienced a patient safety incident, I wasn't very good at providing support. … but now that I have a clearer concept, it feels like I've gained something to build on. I may not be*

able to do it systematically yet, but I think I can support colleagues differently than before. Through this training, I realized how important learning is. I feel like I learned how to express things in ways I hadn't known before. It was good to learn things through education that I couldn't do before, and it makes me want to learn more and try applying it. Group 3

Discussion

This study conducted a randomised controlled trial to evaluate the effectiveness of an actor-based simulation training programme designed to strengthen peer supporters' ability to provide emotional support for second victims. Nurses in the intervention group, who received lecture-based education and simulation training, reported higher self-efficacy in supporting second victims than those in the control group who received lecture-based education only, and this improvement remained evident at the one-week follow up assessment. Lecture-based education alone also produced short-term improvements in self-efficacy, and participants rated the programme highly in terms of clarity of objectives, appropriate level of difficulty, and smooth delivery.

This study is significant in verifying the effectiveness of a peer-supporter training programme for second victims through a rigorous randomised controlled trial design. Previous research on second victim support has primarily emphasised the need for peer support programmes or described the status, utilisation, and satisfaction of existing programmes [25]. Although training approaches such as role-play and video-based simulations have been reported, no study has systematically applied simulation-based education for peer-supporter preparation and empirically tested its effectiveness [26]. By demonstrating the effectiveness of actor-based simulation practice for peer-supporter training, this study addresses a critical gap in the literature and provides a foundation for the development of standardised educational models.

Actor-based simulation training is regarded as an innovative educational method because it promotes immersion through realistic emotional and behavioural interactions while strengthening knowledge, empathy, and communication skills [27, 28]. This approach provides learners with opportunities to make and correct mistakes in a safe environment, facilitating the internalisation of confidence and role performance beyond knowledge acquisition. By practising scenarios such as crises or sensitive conversations with actors, learners can manage emotional burdens and develop strategies for effective coping [29]. The advantages of actor-based simulation were clearly demonstrated in this study. In the present study, the intervention group engaged in simulated peer-support conversations with professional actors portraying distressed colleagues, whereas the control group received lecture-based education that focused mainly on conceptual understanding of second victim support. Although all participants showed short-term improvements in self-efficacy after lecture-based education, participants who additionally engaged in simulation training demonstrated significantly higher self-efficacy compared with those who received lecture-based education alone. In contrast to the passive reception of information in lecture-based education, simulation participants experienced bidirectional communication with immediate feedback, enabling active refinement of supportive communication skills. These findings suggest that experiential learning through realistic scenarios and behavioural practice is critical in reinforcing confidence and consolidating competencies.

The qualitative findings complemented the quantitative results and illustrated how educational effects translated into clinical behaviours. Participants reported that, after training, they deliberately expressed support in conversations with colleagues and used empathic responses more consciously. Thus, even short-term training can move beyond knowledge acquisition to foster attitudinal and behavioural changes in practice—simulation-based education contributes to self-efficacy and clinical applicability.

Furthermore, lecture-based education alone produced significant short-term improvements in self-efficacy. Providing knowledge about the second victim phenomenon, stages of recovery, and principles of peer support raised nurses' awareness and preparedness to assume the peer-supporter role. Such preventive and preparatory effects have been reported in previous studies [25], consistent with the present findings. Moreover, the delivery of training itself may have signalled organisational commitment and support, reinforcing nurses' confidence and willingness to engage in supportive communication with second victims [30]. However, although lecture effects were sustained, their magnitude was lower compared with the intervention group that combined lectures with simulation, underscoring that experiential practice produces greater synergy in strengthening supportive competencies.

From an operational perspective, participants valued the realism and usefulness of simulation-based training and highlighted time burdens and psychological pressure. This underscores the need for peer-supporter education to be delivered as a repeated, stepwise process rather than a single session. While actor-based simulation is highly effective, it requires substantial human and material resources, making institutional support essential. Embedding this training within formal hospital policies and ongoing staff development programmes, rather than offering it as a one-time educational event, would ensure sustained competency building and organisational

commitment to second victim support. To improve accessibility and efficiency, blended learning models that integrate online lectures and videos [31, 32] could serve as a practical alternative, reducing participant burden and enabling wider engagement among healthcare professionals.

Strengths and limitations

The primary strength of this study is its rigorous randomised controlled trial design, which enabled a robust evaluation of an actor-based simulation training programme for peer supporters. This innovative method was applied for the first time and shown to be effective, with repeated measures across four time points, including short-term follow-up, confirming the persistence of training effects.

However, this study had several limitations. First, participants were limited to nurses from a few hospitals, necessitating caution when generalising the findings to other healthcare professions or diverse clinical settings. Future research should include different healthcare roles and institutions of varying sizes to enhance generalisability. Second, the intervention group received more training hours than the control group due to the additional simulation component, making it difficult to determine whether the observed differences were attributable solely to the type of training or partly to the amount of training. Furthermore, the self-efficacy scale relied on self-report, which may have introduced subjectivity. As focus group discussions revealed participants' recognition of difficulties in empathic communication, future studies should incorporate objective measures such as behavioural observations or performance-based assessments to capture competence more accurately. Finally, although the improvement in self-efficacy scores was statistically evident, the one-week follow-up period was relatively short, limiting the ability to assess whether these acquired skills are sustained and effectively applied in actual clinical practice. Further research should examine how peer supporters' competencies are applied and sustained in clinical practice over extended periods.

Conclusions

This randomised controlled trial demonstrated that actor-based simulation training enhanced nurses' self-efficacy in supporting second victims. While lecture-based education produced short-term improvements, simulation-based training contributed to additional gains in supportive competencies. These findings suggest that actor-based simulation is an effective educational strategy for preparing peer supporters. However, the higher attrition rate in the intervention group indicates that more intensive training may pose practical challenges for busy healthcare workers; thus, future implementation should consider strategies to reduce participant burden. To maximise the impact of such training, integration into formal hospital policies and ongoing staff development programmes is recommended. Future research should expand to interprofessional education, develop online and blended learning models, and evaluate long-term outcomes in actual clinical settings to enhance the sustainability and scalability of such programmes.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12912-026-04639-3.

Supplementary Material 1

Acknowledgements

Not applicable.

Author contributions

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Funding

This research was supported by the National Research Foundation of Korea (NRF), funded by the Korean government (MSIT), under grant No. 2022R1C1C1006810, which supported the simulation training program, and grant No. RS-2025-00519423, which supported manuscript preparation and article processing charges.

Data availability

The datasets generated and analysed during the current study are not publicly available due to privacy and institutional restrictions but are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

This study received approval from the Institutional Review Board of Ulsan University Hospital (IRB No. 2022-09-008). All participants provided written informed consent after receiving a full explanation of the study's purpose, procedures, assurances of confidentiality, and the voluntary nature of participation. The trial was retrospectively registered with the Clinical Research Information Service (KCT0009632; https://cris.nih.go.kr) on July 11 2024. The study was conducted in line with the ethical principles outlined in the Declaration of Helsinki.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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Received: 21 November 2025 / Accepted: 6 April 2026
Published online: 11 April 2026

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