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Development and evaluation of an external second victim support program for nurses: a single-group feasibility study

Eun Young Choi¹, Jeehee Pyo^{2,3}, Minsu Ock^{3,4*†} and Haeyoung Lee^{1*†}

Abstract

Background Psychological support programs can help nurses who involved in patient safety incidents. However, most of these programs are operated internally by healthcare providers and utilize peer supporters, which may take a long time to implement. Therefore, there is a need to develop programs that can be used by healthcare providers in healthcare institutions that have difficulty implementing their own programs. This feasibility study aimed to develop an external support program for nurses as second victims and to examine the feasibility, acceptability, and impact of the program.

Methods This study was conducted using a single-group pretest-posttest design. Nurses who experienced patient safety incidents were recruited through posters at three advanced general hospitals, as well as open online recruitment and via a research agency panel from September 2020 to April 2021. The 11 participants attended a total of three one-on-one counseling sessions. Feasibility was evaluated based on participant recruitment and retention, resource availability, program procedures, and the practicability of data collection. Acceptability was assessed through program satisfaction and participant feedback. Psychological impact was measured using the Impact of Event Scale-Revised Korean version.

Results Out of 26 applicants, 11 (42.3%) completed the program, with 10 (38.5%) participants completing both pre and post-program surveys. Most participants responded that they were satisfied with the program and expressed their intention to recommend the program to others and participate in it again if similar situations arise. The participants' median total IES-R-K score decreased significantly from 30.0 to 16.0 ($p=0.028$, $r=0.67$).

Conclusion This study demonstrates the feasibility of an external second victim support program and provides preliminary data suggesting its potential to alleviate the psychological impact of participants. To overcome the limitations of this study, it is necessary to conduct additional controlled trials with a longer follow-up period and a larger sample size.

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Keywords Second victim, Nurses, Psychological support, Patient safety incidents, Feasibility

Background

Nurses who experience patient safety incidents are recognized as second victims of such incidents because they can suffer psychological and emotional trauma in the aftermath of the incident [1, 2]. As second victims, nurses can be seriously affected by psychological, physical, and professional impacts, which can lead to burnout and a change in occupation [3–5]. These negative emotions can persist for days, weeks, months, or even longer [6–8].

Emotional support for second victims can help them return to work quickly after the occurrence of patient safety incidents, effectively support patients and their families who have been harmed, and assist in identifying improvement activities to prevent the recurrence of similar incidents [9]. For these reasons, some healthcare institutions operate second victim support programs [10–16]. These programs operated by healthcare providers utilize trained peer supporters to provide psychological support while ensuring accessibility and confidentiality [17]. The healthcare providers of such programs found them to be beneficial [18]. After four years of program implementation, awareness of the program's availability and effectiveness had significantly increased [19]. Furthermore, second victim support programs have had a positive impact on the patient safety culture [20, 21].

However, these studies have not reported the results regarding the effectiveness of the program evaluated by directly involving the participants to maintain confidentiality [17]. Also, the implementation of second victim support programs requires a long preparation process, including obtaining an agreement from the management and staff, selecting and educating peer supporters, and establishing program systems [11, 14, 16]. Therefore, only a limited number of healthcare institutions can afford to operate support programs [17, 22]. It is necessary to develop a program that can be available to more healthcare providers, while ensuring accessibility and confidentiality, and to empirically evaluate the program's effectiveness.

Therefore, this feasibility study aimed to develop an external support program for nurses as second victims and to examine the feasibility, acceptability, and impact of the program.

Methods

We described the manuscript according to the extension of the Consolidated Standards of Reporting Trials (CONSORT) for pilot and feasibility trials [23].

Study design and data collection

This study was conducted from September 2020 to April 2021 using a single-group pretest-posttest design. Participants attended the program three times at approximately one-week intervals. For the pre-test, the participants received a questionnaire via email after registering for the program and submitted it to the research coordinator before attending the first session. For the post-test, participants were sent the same questionnaire via email after completing the third session and returned it to the coordinator.

Participants

The participants were nurses who were experiencing emotional and psychological distress in the aftermath of patient safety incidents and understood the purpose and procedure of the study, and agreed to participate in the program. Patient safety incidents are defined as events or situations that can cause unnecessary harm to the patient, including adverse events and near misses [24]. No exclusion criteria were set because nurses who needed support would voluntarily participate in the program [10–16]. Because this study was conducted to assess the feasibility of the program, a sample size of ten was considered appropriate [25].

Recruitment

Participants were recruited in two stages: internal recruitment and external recruitment. From September 2020, participants were recruited internally from three advanced general hospitals located in Seoul, Ulsan, and Gyeonggi, following the second victim support programs in previous studies [17]. Internal recruitment notices were posted, and promotional leaflets were distributed within the hospitals to attract participants. Furthermore, the patient safety managers introduced the program to nurses who reported sentinel events and requested active promotion within the hospital nursing department. To compensate for the insufficient number of participants recruited through internal recruitment, we decided to add external recruitment from February 2021. For external recruitment, we posted recruitment notices for program participants on social networking services and emailed recruitment notices to the panel of a survey research agency. Participant recruitment continued until April 2021.

Intervention: “You are not alone (YANA)” program

We developed a psychological support program following the stages of counseling and psychoeducation program development and evaluation: planning, organization,

Table 1 Overview of the You are not alone (YANA) program

Component factor	Description
Participants	Nurses suffering after being involved in patient safety incidents
How to participate	Voluntary
Program type	Individual one-on-one counseling
Provider	Counselor with patient safety research
Main contents	Psychological first aid and emotional support Referral to an expert, if applicable
Session and time	Three sessions, 30–60 min per session

implementation, and evaluation [26]. Table 1 provides an overview of the program, which we named the “You Are Not Alone” (YANA) program to express our commitment to providing empathetic support to nurses who have experienced patient safety incidents.

Planning

We set the goal of the program to alleviate the psychological impact of patient safety incidents on nurses. The conceptual framework of the program was established based on the recovery process for second victims [27] and psychological first aid [28]. Additionally, a needs analysis for the program was conducted targeting potential participants (Table S1, see Additional file).

Organization

We conducted a literature review to gather detailed information on the development process, target participants’ criteria, participation methods, team education and training, components, and outcomes of existing 9 s victim support programs [17]. Based on the findings from the literature review and the needs analysis, we organized the components of the program.

The program was designed to offer one-on-one individual counseling provided by counselors with experience in patient safety research. Counselors were chosen based on the needs analysis, in which it was found that nurses preferred to receive counseling from an external expert instead of peer supporters to avoid potential leakage of personal information and to receive psychological counseling allowing for mutual empathy. As the program was operated externally, establishing direct connections with additional supportive resources from health providers, such as employee assistance programs or referrals to specialized treatment, proved challenging. To address this, we selected counselors with basic counseling knowledge and experience to proactively manage any unexpected situations that may arise during counseling sessions.

The main contents of the program were determined to focus on psychological first aid (PFA) and emotional support. PFA can help alleviate acute stress reactions experienced by nurses due to patient safety incidents and aid in their emotional stability and recovery [29].

Table 2 The content of the You are not alone (YANA) program for each session

Session	Stage	Content
1	Introduction	• Explanation of the program (number of sessions, number of surveys, etc.) • Explanation and consent for recording • Brief explanation of the content to be covered in the three sessions • Screening for trauma symptoms and suicidal tendencies • Exploration of coping methods used by the participant • Education on coping methods and grounding
2	Development	• Grounding • Screening for trauma symptoms and suicidal tendencies • Strengthening support resources used by the participant and identifying new resources • Planning self-help coping strategies
3	Conclusion	• Grounding • Screening for trauma symptoms and suicidal tendencies • Explaining situations where trauma symptoms may reoccur • Strengthening resources and planning coping strategies • Information on program conclusion

PFA consists of the following elements [28]; creating an environment where nurses feel physically and emotionally safe, listening to and empathizing with nurses’ experiences and emotions, providing psychological support and emotional stability, and connecting nurses to professional counseling or psychiatric treatment if needed. Since PFA is not a substitute for professional treatment [30], no specific therapeutic interventions were provided in this study. Instead, of targeting nurses who have experienced patient safety incidents, the aim was to reframe the incidents, foster systemic thinking, derive strategies for handling similar patient safety incidents in the future, and generate positive changes [31].

The program sessions were structured in the form of short-term counseling, consisting of three sessions. The choice of three sessions was based on the preferences indicated in the needs analysis and was considered appropriate considering the shift work schedules of nurses. The estimated duration for each session was around 30 to 60 min. The detailed content of each session is shown in Table 2.

The program was administered by five counselors with experience in patient safety research and professional backgrounds in psychological first aid and trauma counseling. Additionally, the author (EYC), a nurse with experience in patient safety management and education on psychological first aid, provided them with detailed

training on the program contents and exchanged opinions on its operation afterward.

The draft program version was reviewed by an advisory team consisting of one counseling professor, one preventive medicine specialist, two patient safety managers, and two nurses who had experienced patient safety incidents. The feedback provided by the advisory team was incorporated into the program. Furthermore, the program providers conducted a trial run of the program to review its progress and content and shared their opinions regarding the program location and necessary equipment.

Implementation

To ensure the smooth operation of the program, a program manager was appointed, and an operational system was established, which includes the following steps: (a) Interested nurses apply for the program to the program manager by phone, text, or email; (b) The program manager contacts each applicant within 24 h and provides relevant information and a pre-intervention assessment; (c) The program manager assigns a counselor based on the nature and severity of impact of the patient safety incident experienced by each participant, and provides the participant's information to the assigned counselor; (d) The assigned counselor contacts the participants individually to administer the program; (e) After the completion of all three sessions, the counselor provides a small token of appreciation to the participant and provides instructions for a post-intervention assessment.

The counselor and participant coordinated counseling sessions and locations for three sessions. While attempting to schedule sessions with a maximum interval of one week, flexibility was allowed to accommodate the participant's availability. The counseling sessions took place in a quiet and discreet location selected in the area preferred by the participant to ensure privacy. While the contents of the program were structured by sessions, counselors were encouraged to adapt actively based on the participant's story themes, or attitudes. After each session, counselors shared participant reactions, operational needs, and any specific concerns or difficulties encountered during the counseling with the operating team to ensure and maintain the quality of counseling.

Evaluation

The program outcomes were evaluated based on feasibility, acceptability, and psychological impact.

Baseline data

The baseline data collected information about demographics and characteristics of patient safety incidents. Demographic characteristics included gender, age, years of work experience as a nurse, and current position. The characteristics of patient safety incidents that prompted

participation in the program included elapsed time after the patient safety incidents, type of patient safety incidents, patient harm due to the patient safety incidents, whether there was a medical error associated with the incidents, and whether the disclosure was implemented following the patient safety incidents.

Outcomes

Feasibility and acceptability (primary outcomes)

Feasibility is the concept of evaluating whether the program can be realistically implemented [32]. In this study, feasibility was evaluated based on participant recruitment and retention, resource availability, program procedures, and the practicability of data collection. Participants recruitment and retention were assessed based on the number of eligible participants recruited to the program and the percentage of participants who completed the program. Resource availability, program procedures, and the practicability of data collection were evaluated through feedback obtained from program managers and counselors.

Acceptability was assessed using a semi-structured questionnaire to gauge the extent to which participants embraced the program. Quantitative measurements were taken using eight modified items based on the Client Satisfaction Questionnaire-8 (CSQ-8) [33]. Participants responded on a 4-point Likert scale (1–4 points), with higher scores indicating greater satisfaction. The reliability of the CSQ-8 at the time of its development was 0.93 [33]. In the current study, the reliability was found to be 0.90. Qualitative measurements were obtained through open-ended questions, allowing participants to freely express their impressions of the program, challenges faced, and opinions on program progression and operation. Additionally, feedback was sought on areas requiring improvement or enhancement for the continuous operation of the program in the future.

Psychological impact (secondary outcome)

To assess the preliminary effects of the program, the Impact of Event Scale-Revised Korean version (IES-R-K) was utilized to measure the psychological impact before and after participation in the program [34]. This tool consists of 22 items that measure symptoms experienced in the past week related to a specific event, with each item rated on a 5-point Likert scale ranging from 0 (not at all) to 4 (extremely). For example, participants rated the extent to which they experienced symptoms such as 'Any reminders brought back feelings about it,' 'I had trouble staying asleep,' and 'I tried to remove it from my memory.' A higher total score indicates a higher level of impact of the incident. In the study, the reference event for the response to the scale was the patient safety incident that was the event necessary for participation in the program.

The reliability of the IES-R-K at the time of its development was 0.83 [34]. In the current study, the reliability was 0.91 at the initial assessment and 0.96 at the final assessment.

Data analysis

The quantitative data collected were analyzed using SPSS 25.0 (IBM Corp., Armonk, NY, USA). The participants' general characteristics and their program satisfaction were analyzed using frequency, percentage, mean, and standard deviation. The reliability of CSQ-8 and IES-R-K was measured using Cronbach's alpha. Differences in pretest and posttest IES-R-K scores were analyzed using the Wilcoxon signed-rank test. The effect size r was calculated by dividing the Z-score obtained from the Wilcoxon signed-rank test by the square root of the total sample size [35], which resulted in effect size categories being small ($r=0.1$), moderate ($r=0.3$), or large ($r=0.5$) [36]. Finally, Qualitative data from open-ended responses were compiled and summarized.

Table 3 Participant characteristics ($n = 11$)

Categories	Value
Gender, n (%)	
Male	2 (18.2)
Female	9 (81.8)
Age, years, mean (SD)	34.2 (7.7)
Work experience as a nurse, years, mean (SD)	8.4 (7.4)
Position, n (%)	
Staff nurse	9 (91.8)
Nurse manager	2 (18.2)
Elapse time after patient safety incident, n (%)	
< 12 months	5 (45.5)
≥ 12 months	6 (54.5)
Type of patient safety incident, n (%), multiple choice	
Diagnosis-related incident	1 (9.1)
Medication/transfusion-related incident	7 (63.6)
Patient care-related incident	5 (45.5)
Operation/procedure-related incident	2 (18.2)
Infection-related incident	0 (0.0)
Patient harm due to patient safety incident, n (%)	
No harm	5 (45.5)
< 1 month to recover from harm	3 (27.3)
≥ 1 month to recover from harm	0 (0.0)
Permanent disability	1 (9.1)
Death	2 (18.2)
Medical error in patient safety incident, n (%)	
It was a medical error	4 (36.4)
It was not a medical error	4 (36.4)
I do not know	3 (27.3)
Disclosure of patient safety incident, n (%)	
Yes	10 (90.9)
No	1 (9.1)

Ethical considerations

The study was approved by the Institutional Review Board (IRB) of Ulsan University Hospital (No. 2018-07-003). Verbal consent was obtained from the participants for this study. The decision not to seek written consent was based on concerns that obtaining written consent might increase the likelihood of non-participation in the program due to fears of identity disclosure and information leakage related to the incidents. Prior to the implementation of the program, participants were provided with informed explanations regarding the purpose and content of the research, participant anonymity, and data confidentiality. It was also emphasized that participants had the option to decline participation if they wished and that their right to withdraw from the research at any time would be respected.

Results

Participants' characteristics

A total of 11 participants completed all three sessions of the program, and 10 participants completed both pretest and posttest. The characteristics of the 11 participants in the program are presented in Table 3. Participants were predominantly female (81.8%), and the overall mean age was 34.2 years ($SD=7.7$). The mean nursing experience was 8.4 years ($SD=7.4$), and 91.8% were staff nurses. The time elapsed since the patient safety incident was over 12 months for 54.5% of cases. The most frequent type of incident was related to medication and blood transfusion (63.6%), followed by incidents related to patient care (45.5%). The level of harm caused by the incident was "no harm" in five cases (45.5%), while two cases (18.2%) resulted in patient death. Four incidents (36.4%) were identified as medical errors, and 10 participants (90.9%) reported disclosing patient safety incidents.

Feasibility

The participant recruitment and retention flow were illustrated in Fig. 1. A total of 26 nurses expressed interest in participating in the program, with 5 registered through posters placed at hospitals and 21 registered through the research agency panel. Among these, a total of 15 (57.7%) withdrew from the study. Two (7.7%) withdrew as they perceived that the program's purpose did not align with their expectations, one (3.8%) withdrew due to opposition from their nursing supervisor, one (3.8%) withdrew due to personal reasons, and 11 (42.3%) could not be contacted after expressing interest in participation. A total of 11 (42.3%) completed all three sessions of the program. However, due to one participant not completing the post-intervention assessment, 10 participants were included in the final analysis.

Resource availability was adequate, with sufficient staffing and well-organized counseling schedules and spaces

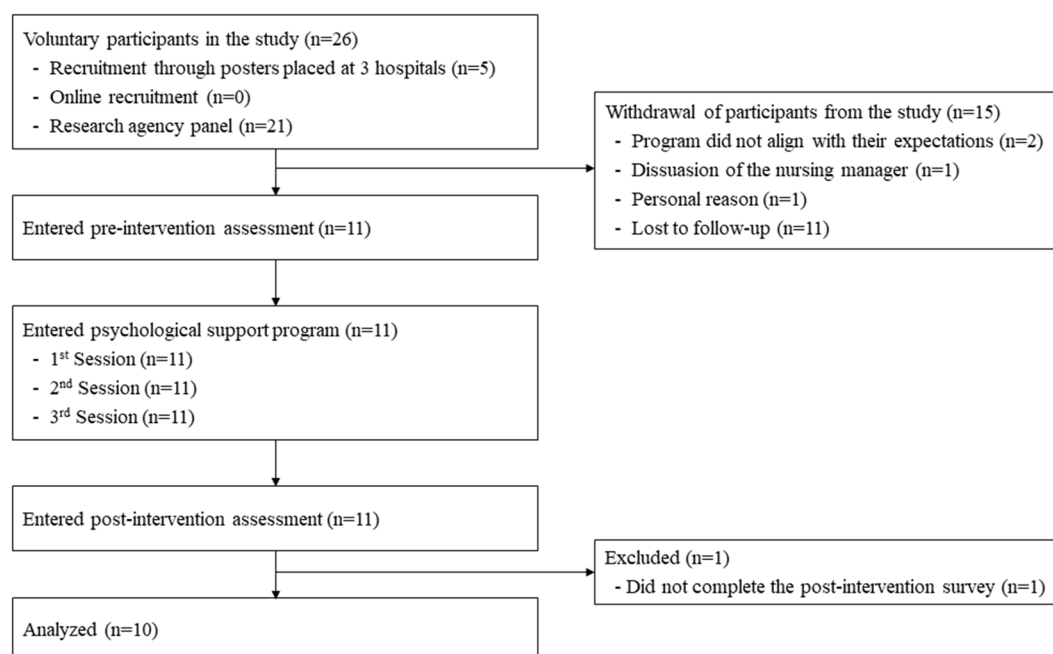


Fig. 1 Participant flow diagram

Table 4 Descriptive data on program satisfaction ($n = 10$)

Items	Mean	(SD)	Min-Max	Median
1. Quality of program	3.3	(0.48)	3–4	3
2. Type of program	3.2	(0.42)	3–4	3
3. Needs met	2.5	(0.53)	2–3	2.5
4. Would recommend to colleagues	3.5	(0.53)	3–4	3.5
5. Amount of help	3.4	(0.52)	3–4	3
6. Dealing with problems	3.1	(0.57)	2–4	3
7. Overall satisfaction	3.3	(0.48)	3–4	3
8. Would return	3.4	(0.52)	3–4	3

Note SD, standard deviation

to meet participants' needs. The roles of the two program managers and five counselors were clearly delineated according to program procedures, ensuring smooth operation of the program. Additionally, the structured program procedures facilitated effective implementation, and the data collection process proved practical, as evidenced by a high response rate (excluding one non-responder), indicating that the tools were used effectively, and the process was manageable.

Acceptability

Most participants reported high levels of satisfaction with the program (Table 4). The aggregated and summarized

results of open-ended questions revealed that participants expressed an intention to recommend the program to others and would consider participating again if faced with similar situations. Participants shared that through the program, they were able to share and discuss their concerns, receive fair advice, and find comfort. Some participants viewed the program as an opportunity to reflect on their role as nurses. However, one participant struggled with recalling past events during the program. Suggestions for program improvement included incorporating various therapeutic methods such as psychotherapy and art therapy, as well as extending counseling sessions. As a means to sustain the program, many participants emphasized the need for active promotion of the program, and some expressed the importance of raising awareness about the program within healthcare institutions.

Psychological impact

Participants' median IES-R-K score significantly decreased after their participation in the program compared to the pretest score (from 30.0 to 16.0) ($z = -2.191$, $p = 0.028$). The effect size ($r = 0.65$) of the program exceeded the effect size category "large" ($r = 0.5$) (Table 5).

Table 5 Comparison of pre- and post-program scores on IES-R-K ($n = 10$)

Time	Mean	(SD)	Min-Max	Median	z	p	r
Pre	33.7	(16.8)	11–62	30.0	–2.191	0.028	0.65
Post	19.4	(16.6)	0–46	16.0			

Note IES-R-K, Impact of Event Scale-Revised Korean version; SD, standard deviation

Discussion

In this study, we developed the YANA program, an external psychological support intervention for nurses as second victims, and assessed its feasibility and acceptability. Over the course of the 8-month program operation, out of a total of 26 applicants, 11 participants completed the program, and 10 participants completed both pre and post-program surveys. Participants expressed satisfaction with the program, stating that it helped them resolve their problems and that they would recommend it to others or use it again. The psychological impact of patient safety incidents on participants decreased after completing the program.

While research on second-victim support programs has been ongoing [22], direct evaluation of the interventions has been limited due to the need to protect participant confidentiality. Additionally, internal programs have only been accessible to staff within the relevant healthcare institutions. This study developed and implemented an external support program, allowing for a direct evaluation of its effectiveness and demonstrating its potential to attract more healthcare providers to participate. This study can serve as a source and reference for constructing and implementing more effective second victim support programs, in line with the global trend of research on second victim support.

The YANA program was based on existing second victim support programs [10–16], with modifications and supplementations to meet the demands of Korean nurses. Unlike previous programs, the YANA program was operated outside of hospital settings, and more participants were recruited through online open recruitment than through hospitals, presumably because minimizing the amount of information collected assured anonymity; that is when the program was not limited to healthcare institutions, more nurses were able to participate while protecting their personal information, which was their greatest concern. A particular advantage of this program's operating method is that it can provide support to nurses in healthcare institutions without the resources to develop and implement their own second victim support programs.

Another distinctive feature of the YANA program is that it utilized external counselors as program providers, which reflects the demands of nurses who were concerned about protecting their identity and confidentiality regarding patient safety incidents. Counselors possess the basic knowledge and skills necessary for counseling and can handle unexpected situations that may arise during the counseling process. Some researchers have recommended that second victim support programs include services provided by a variety of experts trained to deal with second victim phenomena, such as counselors, social workers, and clinical psychologists [14, 37]. The

use of counselors could also help reduce the time needed to select and train peer supporters in healthcare institutions, thereby reducing the time required for program implementation.

During the 8-month program operation period, a total of 26 nurses applied to participate in the program, and 11 nurses (42%) completed all three sessions. The exact reasons for withdrawal from the program were not provided by the withdrawing nurses, but they may have withdrawn due to misunderstandings about the program, low symptom severity, impulsive application, and lack of motivation [38]. In particular, the lack of awareness regarding second victim phenomena and support programs may be a significant hindrance to program participation [11, 14]. Therefore, it is necessary to raise awareness among healthcare professionals that the psychological reactions experienced by nurses after patient safety incidents are normal responses and can be alleviated through emotional support. In future research, it is necessary to consider these points and perform prior preventive education on second-victim phenomena before implementing the program, and to identify the reasons for withdrawal from participation in order to improve the program.

However, the feasibility of the YANA program was confirmed by the zero-dropout rate, with all 11 nurses who started the program remaining present in all three sessions. To further increase participation rates in future program implementations, various measures are necessary. Alongside the aforementioned preventive education, it is imperative to promote the program using channels such as social media, posters, and brochures. Additionally, it is crucial to offer diverse program formats tailored to participants' needs, including not only one-on-one individual counseling but also group sessions and peer support groups. Providing incentives can also encourage participation, whether through monetary benefits such as free program participation or gift cards, or non-monetary benefits like recognition of educational hours. Exploring potential participants' requirements for incentives could also be a viable approach to enhance program engagement.

Participants were generally satisfied with the program and expressed a high intention to reuse it in similar situations and recommend it to others. This high satisfaction could be attributed to the emotional support provided by counselors in individual one-on-one counseling. Similar findings were observed in peer support programs, where participants showed satisfaction, willingness to reuse, and recommend the program [18, 19]. However, some participants expressed a desire for more diverse counseling techniques, highlighting the need to understand and develop various programs to meet the diverse demands

of nurses. This suggests that second victims may require emotional support in various forms.

Moreover, the program was provided without a designated location, with counselors selecting a venue for each session in the participant's preferred area. Although efforts were made to choose quiet and private places, some participants expressed discomfort with the lack of a designated venue and the use of public facilities. To sustain the program in the future, utilizing the branch offices of central or regional patient safety centers, nursing societies, or hospitals may be considered as one option.

The YANA program was developed based on the theoretical framework of psychological first aid, similar to previous second victim support programs [10–16]. Accordingly, the program focused on providing emotional support based on participants' responses and emotions related to the incident, rather than on incident-related information. It helped mitigate the psychological impact of the incident. Some participants found comfort in sharing and discussing their difficulties as nurses, from responding to the incident to coping with work-related challenges. While similar results can be found in previous studies [11, 19], this study is unique in that it directly verified the positive effects of emotional support on second victims. However, the results of this study should be interpreted with caution due to its small sample size and single-group design as a preliminary feasibility study.

There are several limitations to this study. Firstly, the small sample size limits the generalizability of the findings. Secondly, the study employed a single-group design without a control group, which prevents conclusive verification of the program's effectiveness. Thirdly, data for evaluating the program's effectiveness were only collected immediately after program completion, without a follow-up measurement to assess its long-term effects. Fourthly, various variables that could affect program effectiveness were not controlled. Therefore, it is necessary to gather data from more participants and conduct a comprehensive analysis of the program's effectiveness in future studies. Fifthly, to mitigate selection bias resulting from only participants with a high willingness to participate joining the program, we did not impose restrictions on program participation criteria and employed diverse recruitment strategies. However, despite these efforts, over half of the participants who applied for participation withdrew, which could lead to selection bias. Therefore, caution is warranted when interpreting the results. Finally, the program developed in this study was provided by counseling professionals with related knowledge and skills. While this factor may have contributed to the program's effectiveness, it may also have acted as a barrier to program participation due to prejudices towards counseling [11]. In the future, it is essential to develop and implement

various types of programs to better understand the needs of nurses who have experienced patient safety incidents.

Conclusion

The YANA program, an external second victim program, appears to be feasible, and significant results can be obtained in alleviating the psychological impact of patient safety incidents. To address the aforementioned limitations of this study, additional comparative tests with longer follow-up periods and larger sample sizes are necessary. The results of this study can serve as a basis for developing various support strategies for second victims of patient safety incidents.

Abbreviations

YANA	You Are Not Alone
IES-R-K	Impact of Event Scale-Revised Korean version.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12912-024-02285-1>.

Supplementary Material 1

Supplementary Material 2

Acknowledgements

Not applicable.

Author contributions

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Funding

This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government (MSIT) (No. 2018R1C1B6005186). It was also supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government (MSIT) (No. 2022R1C1C1006810). The funder had no role in the study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Data availability

The datasets generated and/or analysed during the current study are not publicly available due participants' refusal to disclose their information but are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

The study was approved by the Institutional Review Board (IRB) of Ulsan University Hospital (No. 2018-07-003), and verbal informed consent was obtained from all participants. The need for written consent was waived by the IRB in accordance with Article 16 of the Bioethics and Safety Act. This waiver was granted due to concerns that obtaining written consent could potentially disclose participants' identities and incident-related information, which might discourage their participation in the program. Furthermore, give that participants provided verbal consent and participated in the program, the IRB deemed the risk to participants from waving written consent to be minimal.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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Received: 10 January 2024 / Accepted: 22 August 2024

Published online: 27 September 2024

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