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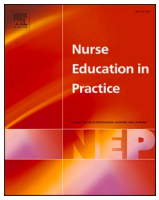

The second victim phenomenon: A qualitative study among bachelor's degree nursing students within the clinical learning environment

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ABSTRACT

Aim: This study explores and describes the second victim phenomenon in nursing students in association with the characteristics of the clinical learning environment and the clinical supervision process.
Design: Qualitative design using conventional content analysis and summative content analysis approaches.
Methods: From September 2022 to July 2023, in-depth semi-structured individual interviews were conducted with a purposive sample of 10 undergraduate nursing students.
Results: Six main themes were developed: 'defining the physical and psychological responses after the most significant patient safety incident', 'analyzing the characteristics of patient safety incidents', 'creating a safe learning environment to provide the best care for patients', 'developing mentorship capabilities and qualities for an ideal follow up of students as a second victim', 'providing resources and integrating support structures to second victim nursing students during their clinical learning', and 'considering the cooperation and coordination between the health institution and the higher education institutions.'
Conclusion: Nursing students become second victims during their clinical placement. The clinical learning environment and mentoring characteristics influence the second victim experience.

1. Introduction

Patient safety (PS) has historically been linked to the maxim "*primum non nocere*". In October 2004, the Global Alliance for Patient Safety was created to facilitate the development of PS policies and practices in all member states (WHO, 2004). For the first time, healthcare leaders, politicians, patient groups, and the World Health Organization (WHO) made collaborative progress towards the safety goal of 'First Do No Harm', leading to the reduction of adverse events and the social consequences of unsafe healthcare.

Since the publication of the article 'To Err is Human' in 2000 by the Institute of Medicine, there has been a growing interest in iatrogenic lesions, PS and quality improvement management. It was the first study to estimate that between 44,000 and 98,000 of hospitalized patients died annually in the United States due to preventable errors (Institute of Medicine, 2000). The proliferation of such incidents has led to recognizing the need for improving the global healthcare PS culture.

PS has been considered one of the strategic components of healthcare management, as it improves quality, efficiency, and productivity (Azyabi et al., 2021). Although an increase in nurses' workloads influences the morbidity, mortality, and safety of patients in Europe, it has been indicated that Spain is one of the European countries with the highest patient-nurse ratio, 11:8 in medical wards and 13:5 in surgical wards (Ayuso-Fernandez et al., 2021).

PS culture refers to values, attitudes, and patterns of behaviors at the individual and group levels to determine how the risks associated with healthcare delivery are managed (Mira et al., 2017). Therefore, current initiatives must encourage healthcare professionals towards safe care, citizen's participation in PS initiatives, enhanced research on PS and, above all, the inclusion of specific training in the curricula of future healthcare professionals (Carvalho et al., 2021).

The term "Second Victim" (SV) was coined by Wu in 2000, emphasizing that systematic errors not only lead to patient harm. It can also harm healthcare professionals, eliciting negative emotional and physical

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responses from those involved (Wu, 2000). In 2009, Scott defined it as follows: "A SV is a health care provider involved in an unforeseen patient adverse event, medical error, and/or patient-related injury who become victims in the sense that the provider is traumatized by the event. Often, second victims feel personally responsible for the patient's unexpected outcome, questioning their clinical skills and knowledge base" (Scott et al., 2010, p. 233). This term encompasses anyone who provides healthcare services to patients (Scott et al., 2010) such as nursing students who are often involved in adverse events, errors, or near-misses during their training (Van Slambrouck et al., 2021; Huang et al., 2020).

2. Background

European Union (EU) is responsible for adequately preparing undergraduate nursing students and ensuring their qualification for entry into a regulated profession (EU directive 2013/55/EU). Training or clinical practice is the process of teaching or learning specific skills, knowledge, or behaviors through practice and experience. It is crucial for the development of technical skills and knowledge as well as the provision of quality care, so the clinical training component of the nursing curricula has many credits in compliance with the European Directive. Nevertheless, near-misses, errors, and adverse events can occur during the training of nursing students.

There are many studies on SV among healthcare professionals in hospitals (Ayuso-Fernandez et al., 2021; Azyabi et al., 2021; Carvalho et al., 2021; Mira et al., 2015) and primary healthcare settings (Mira et al., 2015; McCay and Wu, 2012). However, there is limited scientific evidence regarding this phenomenon among healthcare students in clinical learning environments. A survey in China (Huang et al., 2020) highlighted the seriousness of nursing students becoming SV and the need for a training and supportive program for SV students because of its psychological impact on future healthcare professionals (Huang et al., 2020). A Belgian study examined the prevalence of the SV phenomenon, symptoms, and support that nursing students received after an adverse event (Van Slambrouck et al., 2021). Accordingly, nursing students already became SV during their education, having a significant impact on their performance and personal life. Therefore, nursing students should be prepared to handle adverse events during their clinical practice (Van Slambrouck et al., 2021).

This study aimed to explore and describe the phenomenon of SV in nursing students and its association with the characteristics of the clinical learning environment and the clinical supervision process. Two research questions derived from this aim: 1. What are the characteristics of the clinical learning environment and the supervision process in the SV phenomenon in nursing students? and 2. What are the most frequent physical and psychological symptoms among nursing students as SV?

3. Methods

3.1. Design

This study used a qualitative design to explore the SV phenomenon that nursing students face during their clinical practices. Conventional qualitative content analysis helps comprehend social phenomena by considering both the explicit and implicit content of data (Vaismoradi and Snelgrove, 2019; Elo and Kyngas, 2008). Also, summative qualitative content analysis involves the identification and quantification of certain words or content within text data, followed by an analysis to understand the underlying context and meaning (Hsieh and Shannon, 2005).

In this study, the conventional qualitative content analysis, and the summative qualitative content analysis approaches were found appropriate for answering research questions 1 and 2, respectively.

3.2. Study setting and recruitment

Data were collected during the academic year 2022–2023. Purposeful sampling was used to recruit nursing students in the 3rd and 4th years of their bachelor's degree program who were completing their internship in a public health institution dependent on the region. Internship or clinical placement in nursing education referred to a practical training program for nursing students for gaining real-world experiences in hospitals and healthcare settings. The students worked under the supervision of experienced nurses to develop their skills, apply theoretical knowledge, and understand the intricacies of patient care and nursing education. The recruitment process was initiated with nursing students involved in an adverse event, and the final sample was specified to those participants who met the inclusion criteria.

3.3. Inclusion and exclusion criteria

Participation was sought from nursing students in their 3rd and 4th years of the Bachelor's degree program who were undergoing internships in health centers or hospitals. They were volunteers and had to be present in an adverse event during their clinical learning. International students were excluded from the study.

3.4. Data collection

An in-depth individual semi-structured interview was chosen to deepen our understanding and to connect with the human experience (Tong et al., 2007). For data collection, the 25-item semi-structured interview guide proposed by Scott et al. (2009) was taken as a reference. It was adapted to the context of nursing students and was translated into Spanish by the research team. The translation and adaptation were reviewed by the second and corresponding authors for content validation (Johnson et al., 2020), leading to the development of a total of 19 items (Table 1). The main topics of the interviews were participant demographics, adverse event details, professional and personal impact, participant's experiences or typical reactions to stress, and support structures available for them.

The first author, as an educated qualitative researcher, conducted individual online interviews using the Google Meet platform, facilitating easy and close access to the participants. Each interview was recorded and lasted between 45 and 60 minutes. Data collection and analysis proceeded concurrently, with data analysis conducted after each interview session thereby enhancing the depth and quality of data analysis (Vaismoradi et al., 2013). Once theoretical saturation was achieved where no new themes had emerged from the interviews and additional interviews did not provide any new insights or data relevant to the research questions, the interviews were discontinued (Elo and Kyngäs, 2008).

3.5. Data analysis

Conventional qualitative content analysis and summative qualitative content analysis were used intending to analyze textual data and elucidate themes. The ATLAS.ti Scientific Software 7.5.18 (2017) was used for data management, and the data collection and analysis proceeded concurrently. Drawing on the suggestion by Elo and Kyngäs (2008) and Elo et al. (2014), three steps were followed to analyze the data using qualitative content analysis. Firstly, the transcribed interviews were read frequently to understand the whole content. Secondly, the unit of analysis was specified and used to develop a formative categorization matrix, defining main categories and subcategories as the manifest content based on comparing their similarities and differences. Thirdly, themes, known as the expression of the latent content of the text, were developed. For summative qualitative content analysis, a framework was developed to categorize codes based on physical and psychological symptoms experienced by the students after PS incidents.

Table 1
Semi-structured interview guide.

	Questions
Participant Demographics (collected before the interviews)	1) Gender 2) Academic year
Adverse event details	3) Think about a clinical event in your past that impacted you both professionally and/or personally. Please share what you remember as specifically as possible from the moment that it was discovered that something was wrong. How did you respond to this event? How did it impact you?
Interviewer: If not forthcoming by this participant's recollection, and as appropriate determine:	4) Describe the patient outcome (no harm, temporary harm, permanent harm, death) 5) Mention the probability of this event occurring at the health center where you completed the internship versus other health centers.
Professional and personal impact from this experience	6) Thank you for sharing the details of the event with me. Now, I need you to focus on the immediate need you felt, both professionally and personally, after that the adverse event occurred. Were these needs addressed by tutors/peers/ internship coordinators? 7) How were these needs addressed? 8) What would you recommend for these needs to be addressed?
Participant's experiences or normal reactions to stress	9) When you are concerned or stressed about something happening at work, how do you typically manage those types of situations? 10) Who do you typically turn to when you need advice or reassurance or support about problems during clinical practice? 11) During your clinical training, how did you learn how to approach an adverse patient event on a professional and/or personal basis? 12) Where do you believe is the best place or approach for teachers/tutors and students to manage adverse events?
Support structures	13) Based on your experience, what would you do differently if you were supporting a peer or colleague going through the same thing you went through? 14) How would you describe the environment of the university in terms of support/help versus no support/no help in reference to adverse events that have an emotional impact on students and the healthcare team? 15) What advice would you give if we plan to create a 'perfect world' where the best support/guidance is provided to students who are suffering emotionally after an unexpected outcome or adverse event in the patient? 16) Please review the list of symptoms that some professionals have described. If you have experienced any of them, please relate what impact they have had on you both personally and professionally. Are there any symptoms that are not on the list that you think should be included? 17) Physical symptoms: Extreme fatigue, sleep disturbances, elevated heart rate, high blood pressure, muscle tension, rapid breathing. 18) Psychological symptoms: Frustration, low job satisfaction, anger, extreme sadness, difficulty in concentration, flashback, loss of confidence, grief, remorse, depression, repetitive/ intrusive memories, self-doubt, anxiety about returning to practice, contemplating changing studies, fear of reputational damage, excessive excitability, avoidance of patient care. 19) Do you have any further remarks or reflections you would like to share about your experience?

The data were then systematically coded according to this framework and similar codes were organized to identify patterns along with the interpretation of the underlying context (Hsieh and Shannon, 2005).

3.6. Ethical considerations

This research project was approved and authorized by the Ethics Committee of the University of Alicante (decree code: UA-2022-06-21). The study was carried out under the current legislation, and the confidential aspects of the data were taken care of throughout the research process.

All students signed the informed consent form and agreed to participate. Participants were assured that their responses and identities would remain confidential in any publications resulting from the study. "St" codes were used to reference the students in the interview transcriptions. The participants were free to withdraw from the study at any time.

3.7. Rigor and reflexivity

The COREQ Checklist (Tong et al., 2007) was used to increase the research rigor in terms of reporting the study process (Supplementary file). The students were given the interview transcriptions and were requested to verify the accuracy of the information, ensuring the inclusion of corroborating evidence. The use of the ATLAS.ti software ensured data management's efficiency, promoting reflexivity, and increasing the overall organization level of a qualitative study (Richards and Richards, 1987). This approach facilitated the preservation and enhancement of avenues for reflexivity within the coding process, fostering a closer connection to the data (Lu and Shulman, 2008).

4. Results

4.1. Participants' characteristics

Nursing students who met the selection criteria participated in the research and the interviews during the data collection period (n = 10). None of them refused to participate, and none withdrew their participation from the study. The sample's demographic characteristics have been presented in Table 2. Among the students, nine were female (90 %), and their average age was 24.8 years.

4.2. Main themes related to the second victim

Six main themes were developed: 'defining the physical and psychological responses after the most significant PS incident', 'analyzing the characteristics of PS incidents', 'creating a safe learning environment to provide the best care for patients', 'developing mentorship capabilities and qualities for an ideal follow-up of students as an SV', 'providing resources and integrating support structures to SV nursing students during their clinical learning,' and 'considering the cooperation and coordination between the health institution and the higher education

Table 2
Characteristics of the participants' demographic (n=10).

Variable	Category	Frequency	(%)
Gender	Male	1	(10)
	Female	9	(90)
Age	20 s	8	(80)
	30 s	1	(10)
	40 s	1	(10)
Academic year	3rd	1	(10)
	4th	9	(90)
Interview time	30 min	1	(10)
	45 min	5	(50)
	60 min	3	(30)
	>60 min	1	(10)
Practice ward	Intensive Care Unit	2	(20)
	Surgical Ward	2	(20)
	Medical Ward	3	(30)
	Paediatrics	1	(10)
	Primary Health Centre	2	(20)

institutions.' The interpretations and direct quotations presented here offer insights into the phenomenon SV in the clinical learning environment, as well as its manifestation through the clinical supervision process. Additionally, they shed light on the available support structures provided to them (Table 3).

4.2.1. Defining the physical and psychological responses after the most significant PS incident

The nursing students indicated physical and psychological responses after being involved in a PS incident during their internship. Having physical symptoms and suffering from psychological symptoms had an impact on their personal life and their decisions to continue their studies to become healthcare professionals:

> "I have had a feeling of regret and guilt every time I thought about the adverse event." (St2)

> "I felt very negative about what happened. I had extreme fatigue and sleep disturbances days later, but most of all, since then, I feel a loss of confidence." (St5)

> "Every time I think about the incident, it causes me muscle tension; sometimes I have sleep disturbances, but most of all, I get frustrated about it." (St9)

The type of adverse events during clinical placements and the physical and psychological symptoms experienced by each participant have been presented in Table 4. Medication errors were the most frequent adverse events (40 %, n=4). The most common physical symptoms were muscle tension (80 %, n=8) and sleep disturbance (70 %, n=7). Two participants (20 %) reported no physical symptoms associated with SV. The most reported psychological symptoms were frustration (70 %, n=7) and loss of confidence (50 %, n=5).

4.2.2. Analyzing the characteristics of PS incidents

The nursing students narrated the most significant adverse events concerning PS incidents, indicating where they occurred, the type of error or near misses, and the patient's subsequent outcome:

> "I completed my internship in a healthcare center within the pediatrics service. After administering the vaccine, I realized that I had injected only the solvent, so I administered the vaccine to the child again to ensure that it was done correctly." (St1)

> "During my internship in the ICU, I loaded the full syringe and administered it to the patient. No damage occurred; although diuresis increased, he did not suffer hemodynamically." (St3)

Table 3
Participant quotations with themes and categories to show the characteristics of the clinical learning environment and supervision process in second victim phenomenon in nursing students.

Theme	Category	Quotation
Defining the physical and psychological responses after the most significant PS incident	Psychological response	"When the incident happened, I was very scared; days later I felt frustrated about the situation, having also the feelings of loss of confidence, remorse and fear of reputational damage." (St4)
	Physical and psychological response	"When I see similar situations, I get hand tremors and anxiety thinking about what happened in the past while doing the internship." (St8)
Analyzing the characteristics of PS incidents	Adverse event	"A few minutes after starting the chemotherapy treatment, the patient stopped breathing and experienced cardiorespiratory arrest. She was having an adverse reaction. The patient suffered temporary damage but recovered quickly and without any subsequent complications." (St2)
	Healthcare error	"I was doing accompanying my mentor on the medication round in a medical ward, and we administered the wrong medication to the wrong patient. She started to experience itching and rashes throughout the body. After stopping the medication and administering the antidot, the patient did not experience more harm." (St5)
	Healthcare Error	"I was unaware that one of our patients had a CT scan scheduled but was not adequately prepared for it. It was a lack of communication between professionals. He was not physically harmed. However, the hospital discharge was delayed, increasing the hospitalization cost." (St7)
	Healthcare error	"I carefully removed the central venous catheter and applied a dressing on it as my ICU mentor requested. After a few minutes, the patient was bleeding a lot, and it did not stop. He suffered from temporary damage as he lost a lot of blood, and we had to transfuse blood to him. He later recovered with no consequences." (St10)
Creating a safe learning environment to provide the best care for patients	Organizational resources	"Bad organization! The health professional-student ratio was inadequate as there were two students assigned to a single nurse, and we had a considerable number of patients to attend

(*continued on next page*)

Table 3 (*continued*)

Theme	Category	Quotation
		to; it was overwhelming, and it seemed that we were getting in the way rather than helping." (St1)
	Mentor workload	"My mentor was simultaneously caring for two complex ICU patients while also providing instruction to me. She had too much work and asked if I could help her by removing the central line. I, with my little experience, removed it while the patient was sitting, and I did not apply too much pressure, so the patient started bleeding." (St2)
	Staff shortages and lack of mentor supervision	"There was a lot of load and demand regarding patient care, and sometimes I was left alone without supervision. At that point, I asked the nurse, but if I had not asked her, I would have administered the wrong IV medication." (St9)
Developing mentorship capabilities and qualities for an ideal follow-up of students as a SV	Addressing needs	"The emotional part of the students should be taken into account, and their situation should also be understood. My dad had cancer, and he passed away a few months before I started the internship. I was assigned to the oncology service, and I tried to change my assignment to another ward. My application was not considered, and I could not take advantage of the internship." (St1)
	Assigning same mentor for the duration of internship	"There is no evolution of the practices you do, and each time a different nurse trains you. In addition, many times the last nurse will evaluate you. That is unfair and seems very subjective to me." (St2)
	Safe place to discuss	"To try speaking calmly after the event and see what would have been the best possible action, make the student justify it once he is calmer so that if a similar situation occurs, he can act differently." (St4)
	Safe place to discuss	"Talk openly with the nurse in charge and with your mentor so that they can help you manage what happened and explain how to deal with it again if it happens." (St5)
	Safe place to discuss	"Communication is essential, especially during patient care in the healthcare field, to avoid errors." (St7)
	Safe place to discuss	"I talked to my mentor about what happened; she gave me tips about how to organize myself so that it did not happen again, and always when in doubt, she recommended rechecking the medication prescription." (St8)

Table 3 (*continued*)

Theme	Category	Quotation
	Safe place to discuss	"To talk openly about what happened with your superiors, and if you have confidence with your colleagues, explain how you felt and what you would think have been done wrong to learn from mistakes and prevent reoccurrence." (St10)
Providing resources and integrating support structures to SV nursing students during their clinical learning	Peer Support Mentor weekly meetings	"Develop student support groups and meet regularly to discuss problems. It is often easier for us to understand each other because even if we have an assigned internship tutor, you do not see him accessible to talk about problems." (St2)
	Support groups	"There is a lack of a support structure for the students when an adverse event occurs during the clinical internship." (St3)
Considering the cooperation and coordination between the health institutions and the higher education institutions	Organizational support	"There is no support for students when you become a second victim. It is very impersonal, and we often do not know our internship mentor in person, only the corporate email. I wrote it down in the reflective diary of the practicum, but I did not get any response from my faculty teacher." (St1)
	Accessibility to the mentor	"There is no support for students; the figure of the mentor is something very administrative, but it has no meaning in reality since he is not involved in his functions." (St2)
	Accessibility to university-institution teacher	"During our internship, we receive support from our clinical mentors; however, there is no support provided by the university entity. Once we start the internship, the university forgets about us." (St6)
	Orientation to the unit and protocols before internship starts	"The mentor explained the unit's protocol for conducting exploratory tests. He emphasized the importance of reviewing the unit's agenda, where clinical tests and patients were documented. They are usually checked the night before the test, so that the nil-by-mouth protocol can start at midnight." (St7)
	Accessibility to mentor	"There is no support; when the event happened to me, I turned to the mentor, and apart from not answering my emails and being difficult to get access in person, she hardly paid attention to me and did not acknowledge the significance of the event." (St10)

PS: patient safety; CT: computed Tomography; PS: patient safety; SV: second victim; ICU: intensive care unit; IV: intravenous

Table 4
Nursing students' physical and psychological responses as second victims.

Student	Adverse event	Physical symptoms	Psychological symptoms
St1	Medication error	Sleep disturbance, worry, muscle tension	Frustration, low job satisfaction, difficulty in concentration, remorse
St2	Adverse drug reaction	None	Frustration, self-doubt, loss of confidence, remorse, fear of damage to reputation for having acted in that way
St3	Medication error	None	Frustration and loss of confidence
St4	Wrong wound care management	Elevated heart rate, muscle tension, hand tremor	Frustration, self-doubt, anxiety
St5	Medication error	Sleep disturbance, muscle tension	Self-doubt, anxiety, repetitive/intrusive memories
St6	Near miss	Extreme fatigue, sleep disturbance, muscle tension	Frustration, flashback, loss of confidence, repetitive memory, fear of damage to reputation
St7	Wrong preparation procedure	Extreme fatigue, sleep disturbance, muscle tension	Frustration, flashback, loss of confidence, repetitive memory, fear of damage to reputation
St8	Near miss	Sleep disturbance, muscle tension	Anxiety about eating, loss of confidence, self-doubt
St9	Medication error	Sleep disturbance, elevated heart rate, muscle tension	Frustration, sadness, idea of dropping out of the college because the feeling of not being good enough, remorse, doubt, impaired concentration, excessive worry, fear of damage to reputation
St10	Improper vascular access management	Sleep disturbance, muscle tension, rapid breathing	Anger, extreme sadness, difficulty in concentration, flashback, remorse, repetitive and intrusive memories, contemplating the change of discipline, fear of damage to reputation, avoidance of entering the patient care area

4.2.3. Creating a safe learning environment to provide the best care for patients

The participants perceived that healthcare institutions where they carried out their clinical placement guaranteed safe care by providing sufficient and eligible nursing staff to supervise and train them. They emphasized creating a positive, well-organized clinical location to provide safe patient care. Clinical nurses cared for many patients simultaneously while training one or more nursing students. The participants perceived that it would increase the probability of making mistakes in nursing practice. Due to exhaustion and loss of concentration, they acted without supervision and forgot the crucial care details, leading to avoidable errors:

> "My mentor was overloaded with work, and she was also teaching me; she did not realize that the patient had a CT scan that day, and we completely forgot about her preparation." (St8)

> "There was much work to do; the nurses on duty were overwhelmed with patient care and trying to teach students. If there were more staff, the incident could have been avoided." (St6)

The nursing students mentioned that their clinical mentors and other healthcare professionals must use them to remove staff shortages rather than train them to become well-prepared, qualified nurses in the future:

> "Many times, the healthcare staff of the units used students as a means of support. They saturate us with techniques and work since they have staff shortages. If necessary, we work as nurses and healthcare assistants to help our nurses carry on work shifts. It has happened to me in all nursing wards where I have interned." (St7)

They also highlighted the healthcare institution's function in providing appropriate equipment and facilities to enhance PS. They highlighted a lack of visibility to ensure patient safety during care and a shortage of accessible guidelines or protocols for students to follow to provide safe care:

> "The oncology service was divided into three rooms, and there were rooms where the patient could not be seen from the nursing desk. There was a lack of security and organization. Many patient's chairs were behind the pillars or with their backs to the professionals." (St3)

> "It could happen in any facility if healthcare professionals did not follow their instinct or complied with the guidelines despite seeing that the wound and the patient did not look good." (St5)

4.2.4. Developing mentorship capabilities and qualities for an ideal follow-up of students as a SV

The nursing students expressed the need for continuous evaluation by the same mentor throughout the internship cycle, which would give them more confidence, allow continuity of care, and improve PS culture:

> "We do not always have the same mentor assigned, so each day is different, and it gives the feeling of emptiness during training since no one has follow-up on your practice." (St1)

> "The same nurse is responsible for the student throughout the cycle. I have often felt that we are extra, and nobody cares about us because every day new nurses train you." (St4)

The participants demanded that mentors and ward managers should empathize with students after an adverse event. Talking openly about what happened and how they felt about it helped alleviate their feelings of guilt and cope:

> "I would always recommend discussing what happened with study buddies, mentors and head nurses. You feel better, and it alleviates the feeling of guilt. I would never recommend staying silent in the face of a clinical error." (St3)

> "To ask for help whenever you feel overwhelmed, talk about it and verbalize it to prevent future mistakes." (St6)

Some nursing students expressed dissatisfaction with the lack of sensitivity among their mentors and head nurses regarding the appropriate steps to take after an adverse event. They also highlighted the importance of discussing students' feelings and needs in such situations:

> "I was shocked and did not know how to act. My mentor did not explain how I should have acted after the incident. I felt very lonely." (St2)

"As for the professional side, I have learned that there will be always colleagues to help you and that if you do not know what to do or doubt, you must ask a second or even third person." (St4)

Also, the nursing students identified the necessity of applying the patient safety knowledge acquired during theoretical courses at the university to their clinical practice:

> "I try to apply the five correct rules taught in my university. If I am unsure, I will ask my superiors and mentor, and above all, I will communicate with the patient and their family. Many times, they solve many doubts about their care." (St8)

Regarding the supervision of students' skills, it was necessary to consider their level of training, skill, and preparation during the planning and task organization by the mentors so that the students gained self-confidence and motivation to continue learning and facilitate safe care delivery:

"The first week I started my internship, my mentor saw me as determined, confident and prepared, so she let me give the patients' medications alone." (St10)

"When you undergo internships for a while, and you are given a certain freedom to decide and do certain things or techniques autonomously, obviously under the supervision but without going behind you all the time, it helps you gain self-confidence and motivation to continue learning." (St4)

They appreciate the persistence of mentors in ensuring safe care through leading and organizing nursing activities based on routine nursing skills. Nevertheless, if the students also felt psychologically empowered (i.e., through open disclosure, good communication between mentors and students, student preferences, and personal situations), they would become more confident in the provision of safe care:

"There should be support for students psychologically and prevent them from feeling lonely." (St3)

"At the university, identify which occasions could lead to an adverse event, not only get worried about the theoretical part but also take into account the emotional part of the students." (St9)

According to the participants, it was necessary to supervise them directly and systematically to ensure safe care. Some nursing students appreciated the mentors' approach, which gave them confidence to avoid making mistakes:

"Wait for the mentor to supervise a procedure that can have consequences for the patient. 'Do not be afraid or ashamed to ask superiors!'" (St10)

"I think a mentor's supervision is very important while performing my internship". (St4)

The nursing students expected mentors to hold weekly meetings to discuss problems, issues, and concerns about their internship. It allowed them to follow up on their learning, provide guidelines, or dig deeper into a common topic with other students:

"Encourage mentors to do tutorials weekly so that we can talk about how the internship is going and if we have any problems." (St1)

"Carry out more meetings between students and tutors throughout the internship, at least weekly and discuss all the problems or doubts that we have had." (St5)

They stated that providing safe care and avoiding becoming an SV during clinical placement relied on a positive learning environment. Mentors and other healthcare staff in charge of the students at the wards or units should teach good communication skills. Also, the mentor should be competent in mentoring, well-prepared to teach the students, and have enough time to supervise them, ensuring a patient's safe care:

"In internships, some nurses do not want to teach us, and you feel you bother them." (St3)

"There are also no reference nurses for training, and many times you find professionals who do not like to teach, and you feel that you bother them." (St9)

4.2.5. Providing resources and integrating support structures to SV nursing students during their clinical learning

The students stated that receiving resources for their needs after becoming SV was crucial for developing their learning. During their theoretical training in educational institutions, they were not educated about the phenomenon of SV in PS. Students knew that preserving PS was related to nursing practice and were willing to avoid patient harm. However, this approach was separate from a specific training program or curricular subject on PS:

"There is hardly any subject or topic on PS during our university education." (St5)

"A curricular subject on SV phenomenon, PS and occupational risks is necessary." (St1)

Furthermore, due to the lack of support structure for students experiencing an SV phenomenon, they were expected to strengthen their ties and create a peer student support group to help each other with the same experience:

"Create a support group for students made up mainly of students and a teaching reference to help resolve problems and doubts during a clinical internship." (St10)

"Support groups also made up of more experienced students as they give us more confidence to speak up when there are problems, a speak between equals." (St8)

4.2.6. Considering the cooperation and coordination between the health institutions and the higher education institutions

Nursing students need cooperation and coordination between education and healthcare institutions to provide support structures. Those students who experienced the SV phenomenon also sought the support of their families. When they made suggestions about this, they highlighted the mentor's limited availability and the feedback from the educational institution as the areas of concern:

"The university [higher education institution] is not present during the internship, but only for management and organization tasks; once the internship starts, you have more contact with the health institution where you do the internship. If there is a problem, the university washes its hands." (St8)

Mentors, often possessing greater teaching experience than ward staff, played a crucial role in educating students about ward protocols, structure, guidelines, and the location of primary resources such as emergency resuscitation trolleys and emergency phone numbers. They typically introduced students to the unit in the initial days of the internship, aiming to prevent avoidable adverse events and bolster student self-confidence:

"I would recommend that mentors explain the structure, guidelines and protocols that staff nurses follow before our internship to internalize it and do it as a routine check-up." (St7)

"We need an introductory course to the unit once we start the clinical practice. It would resolve many doubts and serve as a prevention for future adverse events." (St3)

5. Discussion

This qualitative study aimed to examine and elucidate the occurrence of SV among nursing students, considering the attributes of the clinical learning environment and the clinical supervision process.

The current study revealed that nursing students experienced the phenomenon of SV in the context of their clinical practices. This situation is actual and shows the need to consider nursing students as possible SV in the healthcare environment. For this reason, it is essential to train and prepare them to face possible PS incidents that they encounter during their clinical practices (Van Slambrouck et al., 2021). In addition, students would not only have to detect and act on adverse events or near-misses but also participate in its communication through its documentation via a PS reporting system (Steven et al., 2022). The way nursing students manage PS incidents in clinical practice encompasses a range of emotional reactions, immediate responses, influential factors, and outcomes, underscoring the significance of promoting an open and blame-free culture (Gradišnik et al., 2024).

As becoming SV, the most common physical symptoms were muscle

tension and sleep disturbance. Although only 8 of the 10 participants suffered from physical symptoms, all of them had psychological symptoms after being involved in a PS incident. Our study results support those of Huang et al.'s (2020) study, stating that being an SV always implies psychological suffering. The most frequent psychological symptoms among the students were frustration and loss of confidence. Similarly, other studies have affirmed that symptoms perceived by students negatively influenced their learning outcomes and professional efficacy (Ulenaers et al., 2021; Huang et al., 2020). Moreover, the feelings of regret and guilt were described by students after patient harm from an unexpected adverse event, highlighting its direct relationship with the SV phenomenon. There is a need for a clear definition of the SV phenomenon among nursing students (Krogh et al., 2023) since they are mainly at the risk of poor well-being and reduced professional functioning during their clinical training after the occurrence of an adverse event (Van Slambrouck et al., 2021).

Medication errors were our students' most frequent adverse event, which led them to become SV. In previous studies, medication errors have also been detected as the most frequent type of mistake among students (Stolic et al., 2022; Dehvan et al., 2021; Asensi-Vicente et al., 2018; Vaismoradi et al., 2014). It has been indicated that 5–10 % of all errors committed in hospital settings are related to the medication process (Stolic et al., 2022). From the student's perspective, the causes were the lack of teaching for the safe handling of medications and the lack of skill, care, and concern at the individual student level (Vaismoradi et al., 2014). Other preventable patient harm reported by our students were adverse reactions to medications, poor preparation or performance of a procedure, or nursing care.

The students emphasized providing a safe learning environment to provide the best care for patients and avoid PS incidents. The mentor-student ratio needs to be improved because the status leads to a lack of explanation of techniques and incorrect patient preparation for teaching the procedures. Additionally, there was a significant workload and demand for patient care, resulting in tasks being delegated to students to address staff shortages. In this study, mentors and students' weekly meetings facilitated understanding of internship difficulties. Psychological safety in nursing mentorship is the perception of students' inclusivity, empowerment, and well-being within the social, cultural, and physical clinical learning environment. A vital element in fostering a psychologically safe environment is the mentor's accessibility and approachability (Hardie et al., 2022). Communication between students and mentors improves PS competency regarding attitude, skills, and knowledge among undergraduate nursing students (Kim et al., 2019).

The students complained about the evaluation process in clinical settings since they had many mentors during the internship period, and most of the time, they were evaluated only by the last mentor. This evaluation needed to be more objective and accurate. Continuous evaluation by the same mentor will allow students to improve their technical nursing skills and knowledge to support their professional goals (Van Patten and Bartone, 2019). Furthermore, nursing mentors also need to consider the level of students' capabilities, skills, and readiness during planning, organizing, and division of tasks. In addition, educational instructors and trainers should identify and teach students about effective communication strategies to prevent medical errors (Noland and Carmack, 2015). In this study, weekly meetings between mentors and students facilitated the understanding of internship difficulties. It has been stated that weekly meetings can improve PS competency among nursing students (Kim et al., 2019).

The students expected to have more knowledge of PS to prevent errors during their clinical placement. The current international literature lacks sufficient insights into the PS knowledge of newly registered nurses (Murray et al., 2018). A study in South Korea highlighted the importance of PS education for university students by adding PS-related topics into the curriculum and identifying relevant content in each topic (Lee et al., 2016). Moreover, our study did not have a curricular approach to the SV phenomenon during the PS program at nursing schools. Similarly, Sánchez-García et al. (2023) reported concerns around the PS topics, as the SV phenomenon was primarily absent in the undergraduate curricula of 206 European nursing faculties. This gap underscores the necessity of incorporating the topic of SV and other PS issues into the curricula of European healthcare students.

The nursing students also emphasized the lack of a support structure when they became SV during clinical practice. The necessity of cooperation and coordination between the university, the healthcare institution, and healthcare professionals to provide support structures, guidelines, and protocols to the students during clinical placement was highlighted. Creating a support group of students who have experienced the phenomenon of SV can help them cope with their experiences (Krogh et al., 2023). Education institutions should, therefore, bear the responsibility to prepare students for the probability of a PS incident during clinical placement (Van Slambrouck et al., 2021). Students learn about PS during their internships, developing favorable competencies and unfavorable habits. By applying content on the importance of patient-centered care, human factors, efficient teamwork, clear communication, adverse event reporting, learning from mistakes, and risk management, and employing these methods in both education and practice, the overall quality of healthcare can be improved (Tella et al., 2016). Healthcare organizations offering clinical practice for students should prioritize the enhancement of mentoring competence among nurses. This can be achieved by providing adequate education for nurse mentors, ensuring that the organizational structure offers them substantial support, and creating a conducive learning atmosphere (Tuomikoski et al., 2020).

6. Strengths and limitations of the study

The study exhibits limitations that warrant careful consideration when transferring its results, particularly considering variations in curricular practices within Spanish nursing education and its differences with nursing education in other countries. The representativeness of women in our study is quite similar to the percentage of female nursing students in the national population, 73.6 % in 2021 (Ministry of Health, 2022). However, the fact that almost all the participants belong to the 4th academic year might affect the results. These students have had the most extended clinical practice training; therefore, the possibility of becoming SV has increased. Furthermore, the fact that they are in the last period before graduation usually makes it easier for them to be significantly more critical. Although our purpose has been exploratory, not focusing on a specific type of clinical unit or ward or comparing the rural versus urban clinical environment might influence the power of our study results.

Additionally, recruiting students posed challenges due to their engagement in clinical practice across diverse healthcare institutions with varying work schedules. To mitigate these challenges, an online platform was used to recruit participants and conduct interviews to maximize inclusivity. However, this study potentially enhances our understanding of the SV phenomenon among students during clinical placements, addressing the existing knowledge gap within the clinical placement period.

7. Conclusion

This research indicated that the characteristics of the clinical learning environment and the clinical supervision process were associated with the phenomenon of SV among nursing students. Hence, there is a pressing need for a deeper understanding of the phenomenon of SV among nursing students, aiming to formulate preventive and support strategies to assist students following a PS incident.

The outcomes of this study are expected to generate heightened interests in the SV phenomenon among nursing students within the realm of nursing education. Promoting discussions on developing and applying curricular programs that can provides knowledge and training on the SV

phenomenon and psychological support by healthcare and academic institutions is essential. Moreover, efforts should be made to coordinate and cooperate between healthcare and educational institutions, implementing meetings to report and discuss PS incidents and empowering the PS culture. As a result, nursing students can enhance their comprehension of PS incidents, refine the management of physical and psychological symptoms associated with adverse event experiences, and bolster their confidence in delivering PS care during clinical practice.

Our students commonly experienced medication errors as their primary adverse event, contributing to being SV. To address this issue, enhanced training programs focusing on medication management protocols and error prevention strategies and empowering students to report errors promptly and seek assistance are required.

Moreover, integrating initiatives into the nursing curriculum, such as emphasizing the SV experience, devising strategies to navigate emotions post-PS incidents, and incorporating discussion groups or simulation-based training, along with establishing support groups for students affected by the SV phenomenon, can contribute to preventing and mitigating the impact and consequences of SV. Further research is imperative to illuminate this phenomenon and its profound implications for the healthcare sector.

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CRediT authorship contribution statement

M Flores Vizcaya-Moreno: Writing – review & editing, Writing – original draft, Supervision, Methodology, Investigation, Formal analysis, Conceptualization. **Andrea Albert-Galbis:** Writing – review & editing, Writing – original draft, Software, Methodology, Investigation, Formal analysis, Conceptualization. **Rosa M Pérez-Cañaveras:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Investigation, Formal analysis, Conceptualization. **Mojtaba Vaismoradi:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Conceptualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.nepr.2024.104038.

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