JERN Journal of Education and Research in Nursing

Original Article

DOI: 10.14744/jern.2025.46144
J Educ Res Nurs. 2025;22(4):266-274

Views of Nurses Working in Surgical Intensive Care Units on Pressure Injury Prevention and Care: A Phenomenological Study

Sercan Yanık,[1] Durdane Yılmaz Güven[2]

[1]Karabük University The Institute of Graduate Programs, Karabük, Türkiye

[2]Department of Nursing, Karabük University Faculty of Health Sciences, Karabük, Türkiye

Abstract

Background: Intensive care units are settings where life-threatening illnesses are treated and cared for, and complex clinical processes are managed. In the surgical intensive care unit, immobility, hemodynamic changes, nutritional problems, and the use of invasive equipment during and after surgery increase the risk of pressure ulcers. Nurses' knowledge, clinical skills, and attitudes play a decisive role in preventing these injuries.

Aim: This study was conducted to determine the opinions of nurses working in a surgical intensive care unit regarding the prevention and care of pressure ulcers.

Methods: The research was conducted using the phenomenological approach, one of the qualitative research methods. The study included 30 nurses working in the surgical intensive care unit (ICU) of a training and research hospital. A focus group interview was conducted with the participants, who were divided into seven groups based on their interview dates. Data were collected using a "Personal Information Form" containing the sociodemographic characteristics of the nurses and a "Semi-Structured Focus Group Interview Form," then analyzed and coded with the MAXQDA program.

Results: It was determined that 20 of the participants were female, 14 were between the ages of 23 and 29, 20 were married, and 23 had a bachelor's degree. From the interviews with nurses working in the surgical intensive care unit, six code models were developed: "importance of pressure injury (PI)," "factors affecting care in PI," "patients at risk of developing PI," "suggestions to improve care in PI," "methods to be followed in preventing PI," and "feelings while providing care to patients with PI."

Conclusion: In conclusion, increasing the number of nurses in surgical intensive care units, ensuring the availability of up-to-date wound care products, promoting the effective use of devices and materials designed to prevent PI, and strengthening in-service training programs on this issue emerge as fundamental requirements for the prevention of PI. It is recommended that future studies be conducted using a mixed-method design with larger groups.

Keywords: Nursing care, pressure injury, pressure ulcer, qualitative research, surgical intensive care

Introduction

Intensive care units (ICU) are specialized units where patients who require advanced care and continuous observation due to critical health problems are treated.[1] In these units, many factors such as prolonged immobilization of patients, use of certain medications, connection to a respirator, vascular diseases, and surgical operations increase the risk of Pressure injury (PI).[2–5] PI is a complication that usually develops as a result of prolonged exposure of the skin over bony prominences or underlying soft tissue to prolonged pressure or mechanical factors such as friction, and it seriously affects the patient's quality of life.[6] PIs are also considered an important indicator of the quality of nursing care.[7,8] When the literature is examined, it is revealed that nurses have difficulty putting theoretical knowledge into practice in PI prevention, that they lack knowledge in this regard, and that information can be forgotten if training is not continuous.[9–11] In a multicenter project conducted to determine the prevalence of PIs in our country, it was found that the structured training provided to nurses significantly increased their knowledge levels and improved the frequency of skin and PI assessments. However, when the prevalence was re-evaluated approximately three months later, the training was not found to have a significant effect on the prevalence rate.[11] In the study examining PI knowledge among intensive care nurses, it was determined that there were knowledge gaps related to PI practices.[12]

Examining the attitudes and knowledge levels of nurses working in surgical ICUs toward PI is of great importance for developing effective strategies to prevent this health problem. Although there are many studies on PI in the literature, there are no qualitative studies examining the difficulties experienced by surgical intensive care nurses in the prevention and care of PI, or the emotions and experiences they have while providing care to these patients. In this context, the study was carried out using a phenomenological approach, one of the qualitative research methods, to determine the attitudes of nurses working in surgical ICUs regarding the prevention and care of PI. The phenomenological approach examines the perspectives, feelings, understandings, and shared experiences of selected groups on a given topic or concept and identifies emerging themes.[13] Considering the limited number of qualitative studies on PI at the international level, the findings of this study will help elucidate the challenges experienced by nurses and contribute to the development of more effective educational and support programs.

This research article was produced from the master's thesis.

Cite this article as: Yanık S, Yılmaz Güven D. Views of Nurses Working in Surgical Intensive Care Units on Pressure Injury Prevention and Care: A Phenomenological Study. J Educ Res Nurs. 2025;22(4):266-274.

Corresponding author: Durdane Yılmaz Güven
E-mail: durdaneguven@karabuk.edu.tr

Received: July 25, 2025
Accepted: October 24, 2025
Publication Date: December 01, 2025

Research Questions

- What are the experiences of nurses working in surgical intensive care units regarding PI prevention?
- What are nurses' recommendations for caring for patients with PI in surgical intensive care units?
- What are the feelings of nurses working in surgical intensive care units when caring for patients with PI?

Materials and Methods

Study Design and Setting

In this research, the phenomenological approach, one of the qualitative research methods, was adopted. The hospital has a bed capacity of 528 and is registered for 400 beds. The hospital where the study was conducted includes an intensive care unit with 54 beds and 91 nurses. The surgical intensive care unit has 27 beds and 45 nurses. This study setting was chosen because it provides tertiary-level surgical intensive care and performs more than thirty surgical procedures daily.

Study Participants

The criterion sampling method, a type of purposive sampling, was used to select the participants. In this qualitative study, the sample size was determined based on the principle of data saturation rather than a predetermined numerical target. Data collection continued until no new themes, codes, or insights emerged from the participants' responses and the data began to repeat. At the point of redundancy—when additional interviews no longer provided novel information—the recruitment process was concluded. This approach ensured that the data were sufficiently rich and comprehensive to address the research question while maintaining methodological rigor consistent with qualitative research standards. The study was conducted with 30 nurses. Nurses who worked in the surgical ICU, were involved in the wound care process, had at least one year of experience in caring for patients with PI, and agreed to participate voluntarily were included in the study. The demographic characteristics of the participants are presented in Table 1.

Data Collection Tool

The data were collected by the researcher between January and February 2024 in the Surgical Intensive Care Units of Karabük Training and Research Hospital. The research data were collected using the *Personal Information Form* and *Semi-Structured Focus Group Interview Form*, which included the sociodemographic characteristics of the participants. The *Semi-Structured Focus Group Interview Form* was prepared by obtaining expert opinions. The interview form consisted of eight open-ended questions developed in accordance with the literature. For the content validity of the questions, expert opinions were obtained from faculty members (two academicians specialized in nursing and one academician specialized in qualitative research methods) and wound care nurses, after which the questions were revised.

Data Collection

Participants were divided into seven groups of four to five nurses each. Focus group interviews were conducted with these groups, and each interview was audio recorded. The recordings were stored and protected in accordance with confidentiality principles. The interviews were conducted by the researcher working in the in-

Table 1. Demographic information of nurses working in surgical intensive care units

Code	Gender	Age	Educational status	Marital status	Weekly working time	Working time in the profession	Working time in surgical ICU
K1	Male	33	Postgraduate	Married	40 hours	8 years	5 years
K2	Male	31	High school	Married	40–64 hours	13 years	8 years
K3	Male	31	Bachelor	Married	40–64 hours	4 years	3 years
K4	Male	37	Bachelor	Married	40–64 hours	5 years	2 years
K5	Male	41	Bachelor	Married	40 hours	15 years	10 years
K6	Female	24	Bachelor	Single	40–64 hours	1 year	1 year
K7	Male	30	Bachelor	Married	40–64 hours	5 years	5 years
K8	Male	30	Bachelor	Single	40–64 hours	5 years	5 years
K9	Female	35	Postgraduate	Married	40 hours	12 years	8 years
K10	Female	40	Bachelor	Married	40 hours	18 years	15 years
K11	Female	46	Bachelor	Married	40 hours	29 years	15 years
K12	Female	27	Bachelor	Single	40–64 hours	4 years	1 year
K13	Female	28	Bachelor	Married	40–64 hours	4 years	2 years
K14	Female	30	Bachelor	Married	40–64 hours	5 years	2 years
K15	Female	23	Bachelor	Single	40–64 hours	1 year	1 year
K16	Female	28	Bachelor	Married	40–64 hours	4 years	3 years
K17	Female	24	Bachelor	Single	40–64 hours	1 year	1 year
K18	Female	25	Bachelor	Single	40–64 hours	1 year	1 year
K19	Female	25	Bachelor	Single	40–64 hours	1 year	1 year
K20	Female	30	Bachelor	Married	40–64 hours	4 years	4 years
K21	Male	30	Postgraduate	Married	40–64 hours	5 years	4 years
K22	Female	31	Postgraduate	Married	40–64 hours	8 years	6 years
K23	Female	26	Bachelor	Married	40–64 hours	4 years	2 years
K24	Female	28	Bachelor	Single	40–64 hours	4 years	3 years
K25	Female	31	Postgraduate	Married	40–64 hours	8 years	6 years
K26	Male	42	High school	Married	40–64 hours	24 years	15 years
K27	Female	27	Bachelor	Married	40–64 hours	4 years	2 years
K28	Male	28	Bachelor	Married	40–64 hours	5 years	4 years
K29	Female	29	Bachelor	Single	40–64 hours	5 years	4 years
K30	Female	25	Bachelor	Single	40–64 hours	2 years	1 year

ICU: Intensive care unit

DOI: 10.14744/jern.2025.46144
J Educ Res Nurs. 2025;22(4):266-274

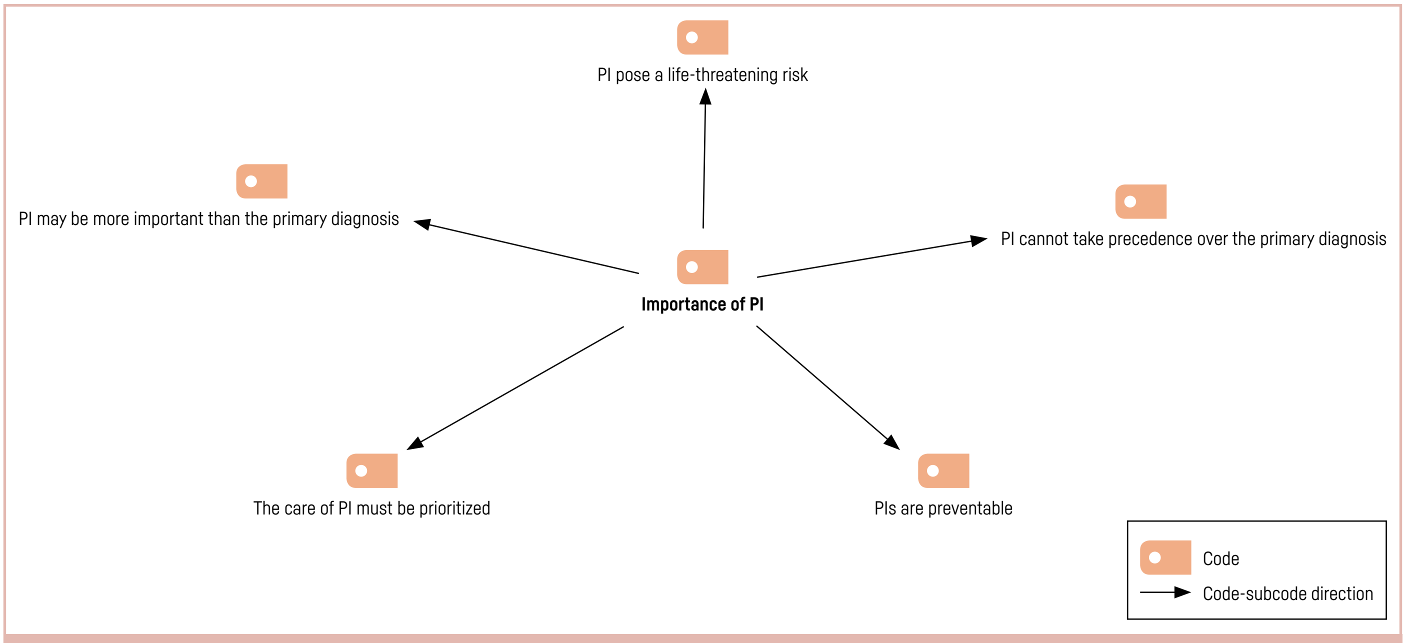

Figure 1. Code-subcode model showing the views of nurses working in surgical intensive care units on the importance of PI.

tensive care unit. Data collection took place in a room within the hospital suitable for interviews and audio recording. Interviews with surgical intensive care nurses continued until data saturation was reached. Depending on the number of participants in each group, the shortest interview lasted 30 minutes and the longest 52 minutes.

Ensuring Trust

In qualitative research, the researcher's design and paradigm are said to have a significant impact on the selection of validity and reliability criteria. Several qualitative research methods were utilized to establish the validity and reliability of the study. To ensure internal validity and reliability, the "triangulation" technique was used. To ensure external validity, the "rich and dense description" technique was applied.[14]

Data Analysis

The interviews were transcribed by researchers (SY, DYG) in a computer environment using Microsoft Word. The data obtained (n=30) were recorded using a voice recorder and transcribed into Microsoft Word documents, resulting in a total of 136 pages of data. The data were then coded using the MAXQDA program for qualitative data analysis. First, the audio files of the interviews were converted into Word text and transferred to the MAXQDA project file. The researcher then read the interview documents and coded the meanings obtained, with the support of a professional researcher. These codes were subsequently categorized through thematic analysis into coherent themes. The Code-Subcode model and Code Relationship Browser interfaces were used in data analysis. In the study, the obtained data were presented in a descriptive and systematic research report. The perspective and critical interpretation ability of the research were strengthened by obtaining expert opinions. The accuracy of the interviews was confirmed by both participants and experts, and the study was conducted in accordance with a defined conceptual framework using the Qualitative Method Writing Guide.

Ethical Considerations

Before starting the study, ethics committee permission was obtained from the Karabük University Non-interventional Clinical Research Ethics Committee (Approval Number: 2023/1556, Date: 06.12.2023), and institutional permission was obtained from the Scientific Research Ethics Committee of Kastamonu Training and Research Hospital (Approval Number: E-44008972-929, Date: 24.01.2024). The purpose and scope of the study were explained to the participants; it was stated that participation was voluntary, that they could withdraw from the study at any time, and that the information they provided would be kept confidential. The data obtained from the interviews were coded and analyzed anonymously, and processed without any connection to identity information. The study adhered to the ethical principles outlined in the Declaration of Helsinki.

Results

According to the results of the study, 66.6% of the participants were female. Fourteen of the participants were between the ages of 23–29, and 23 nurses were undergraduate graduates. Twenty-eight of the participants (93.33%) stated that they chose their profession willingly, and all of them (100%) stated that they preferred to work in surgical intensive care.

In this study, six main themes emerged from qualitative data analysis. These themes were: (1) Importance of PI, (2) Factors Affecting the Care of PI, (3) Risk of Developing PI, (4) Suggestions to Improve Care for PI, (5) Emotions Felt by the Personnel Caring for Patients with PI, and (6) Methods to Be Followed to Prevent PI. Collectively, these themes provide a comprehensive understanding of the multifactorial aspects of PI management from the perspectives of healthcare personnel.

Theme 1: Code-subcode Model Indicating the Thoughts of Nurses Working in Surgical Intensive Care Units About the Importance of PI

The opinions of the nurses about the importance of these injuries were grouped under five sub-codes: "poses a life risk," "can be prevented," "may be more important than the main diagnosis," "care should be prioritized," and "cannot get ahead of the main theme." Participants indicated that PI pose critical health risks and that care for these injuries often needs to be prioritized. There was also a widespread view that PI can be prevented if appropriate measures are taken. However, some nurses emphasized that, no matter what is done, PIs are sometimes inevitable (Fig. 1).

> "*Depending on the degree of PI, it may precede the main diagnosis. For example, in acute pancreatitis, you first treat and care for it. However, a decubitus that has reached stage 4, has descended to the bone, and is infected, in my opinion, overrides the main diagnosis*." (P5/Male/41 years old/Undergraduate)

> "*...Because infection in the patient due to PI can lead to sepsis and then death...*" (P3/Male/31 years old/Undergraduate)

> "*PI is an easily preventable condition. It can be easily prevented with barrier cream, patient skin care, and position changes*." (P14/Female/30 years old/Undergraduate)

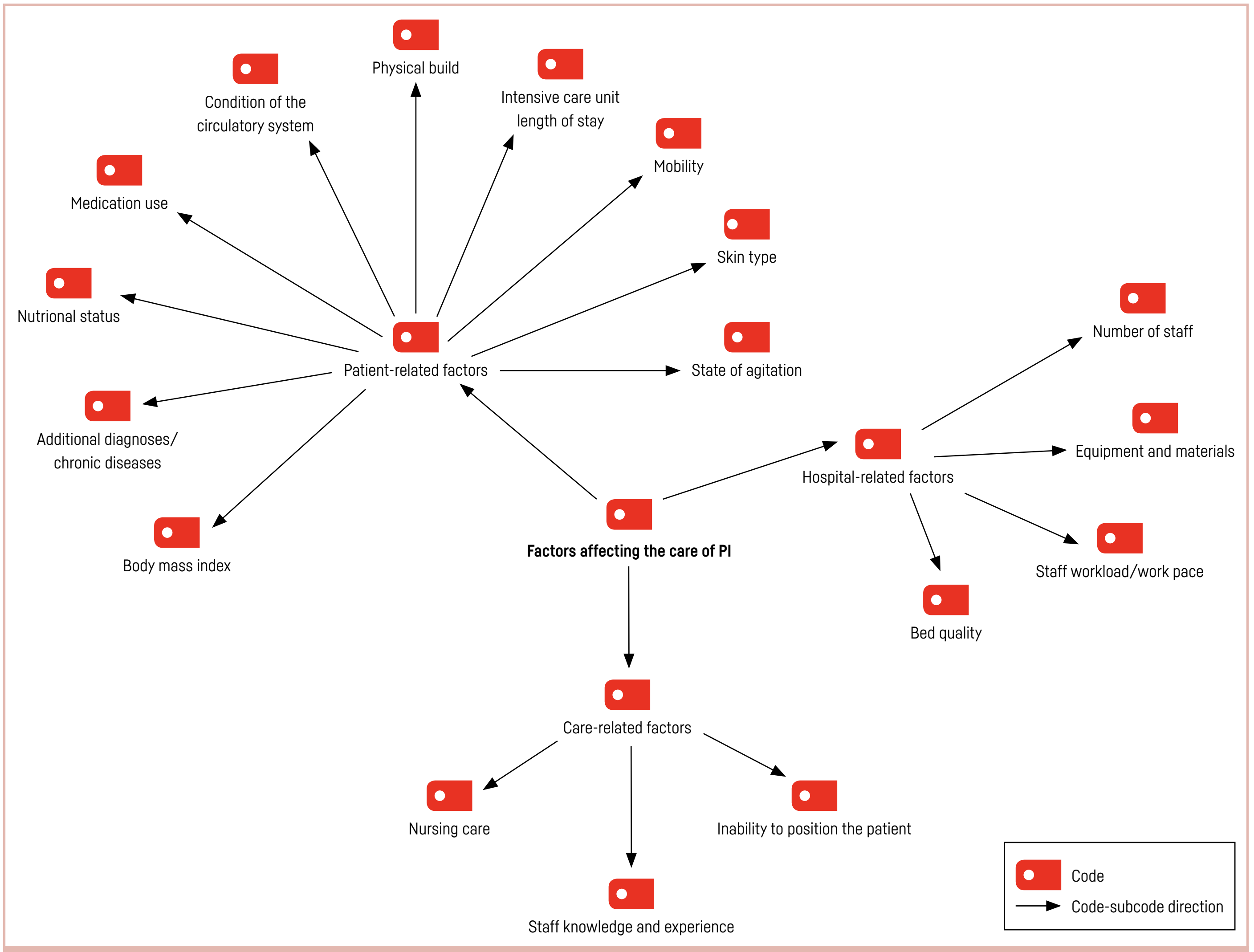

Figure 2. Code-subcode model of factors affecting the care of PI in surgical intensive care units.

Theme 2: Factors Affecting Care in PI in Surgical Intensive Care Units – Code-subcode Model

In this model, three main code-subcode categories were identified: "patient-related elements," "elements related to hospital conditions," and "elements related to care." In the code-subcode model of "patient-related factors," expressions such as "body mass index, additional diagnoses/chronic diseases, nutritional status, medication use, circulatory system status, constitution, duration of hospitalization, mobility, skin structure, and agitation status" were included. In the code-subcode model of "factors related to hospital conditions," the expressions "number of personnel, equipment and materials," and "personnel workload/work tempo" were specified. In the "elements related to care" code-subcode model, the expressions "positioning/non-positioning, staff knowledge and experience," and "nursing care" were included (Fig. 2).

> "*I don't think that pressure sores are always only related to nursing care. Pressure sores are also related to the weight of the patient, i.e., whether they are obese or cachectic.*" (P2/Male/31 years old/High school)

> "*...Our workload is too much. In other words, we do doctor's work, personnel work, and secretary work. Apart from my patient-oriented work, I also do extra work because I work in a paperwork-oriented way; I even have to go to the pharmacy to buy medicine.*" (P28/Male/28 years old/Undergraduate)

> "*I think it has a very, very important place for us because 'nurse means care' and 'care means reduction of pressure sores.'*" (P22/Female/31 years old/Graduate)

Theme 3: Identifying Patients at Risk of Pressure Wound Development in Surgical Intensive Care Units – Code-subcode Model

In the code-subcode model for patients at risk of PI, the following categories were identified: "obese or cachectic patients," "elderly patients," "diabetic patients," "patients with low level of consciousness," "cerebrovascular occlusion (SVO) patients," "cardiac patients," "patients with chronic obstructive pulmonary disease (COPD)," "patients with low albumin levels," "trauma patients," and "patients who cannot be positioned." These classifications emphasize the likelihood of developing PI based on patients' health status. Nurses stated that the risk of PI is higher, especially in patients who are difficult to position or have fragile skin structure (Fig. 3).

> "*I don't think that pressure sores are always only related to nursing care. Pressure sores are also related to the weight of the patient, i.e., whether they are obese or cachectic.*" (P2/Male/31 years old/High school)

> "*Apart from that, since there is delayed healing in diabetic patients, both PI occurs and progresses faster.*" (P8/Male/30 years old/Undergraduate)

DOI: 10.14744/jern.2025.46144
J Educ Res Nurs. 2025;22(4):266-274

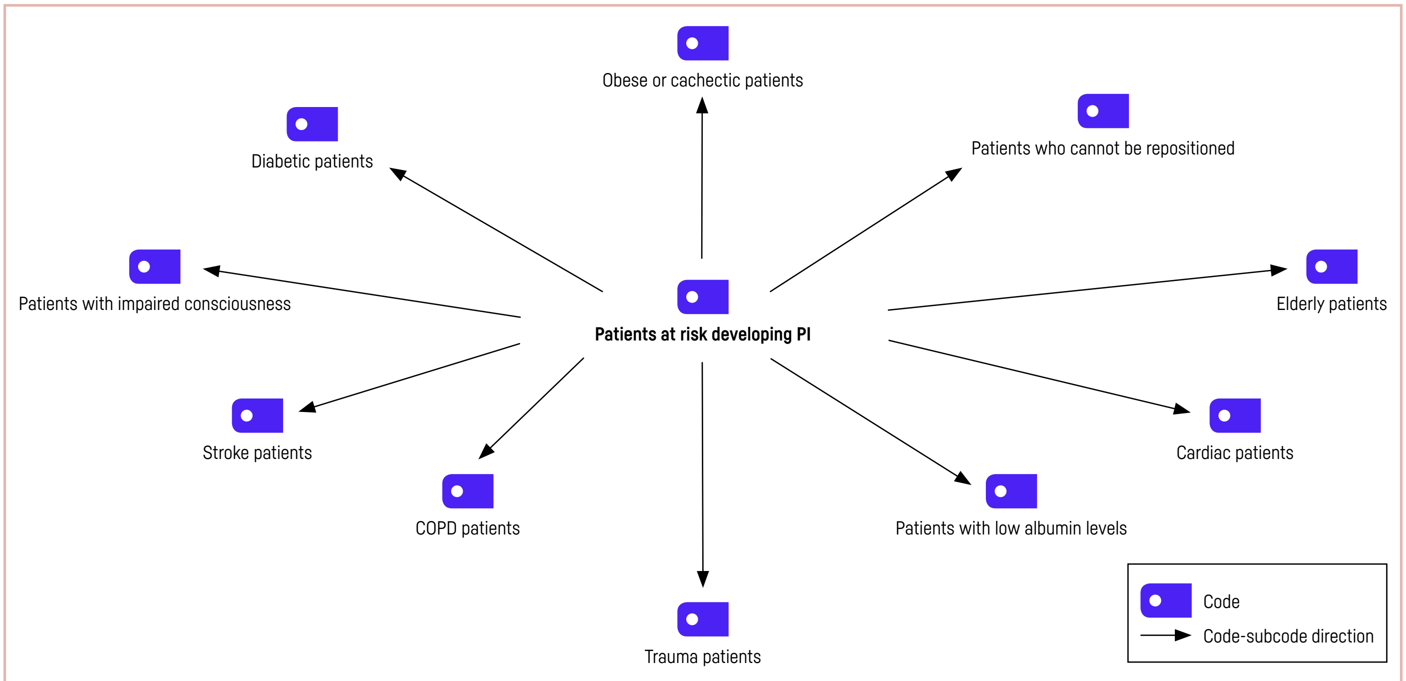

Figure 3. Code-subcode model introducing patients at risk of developing PI in surgical intensive care units.

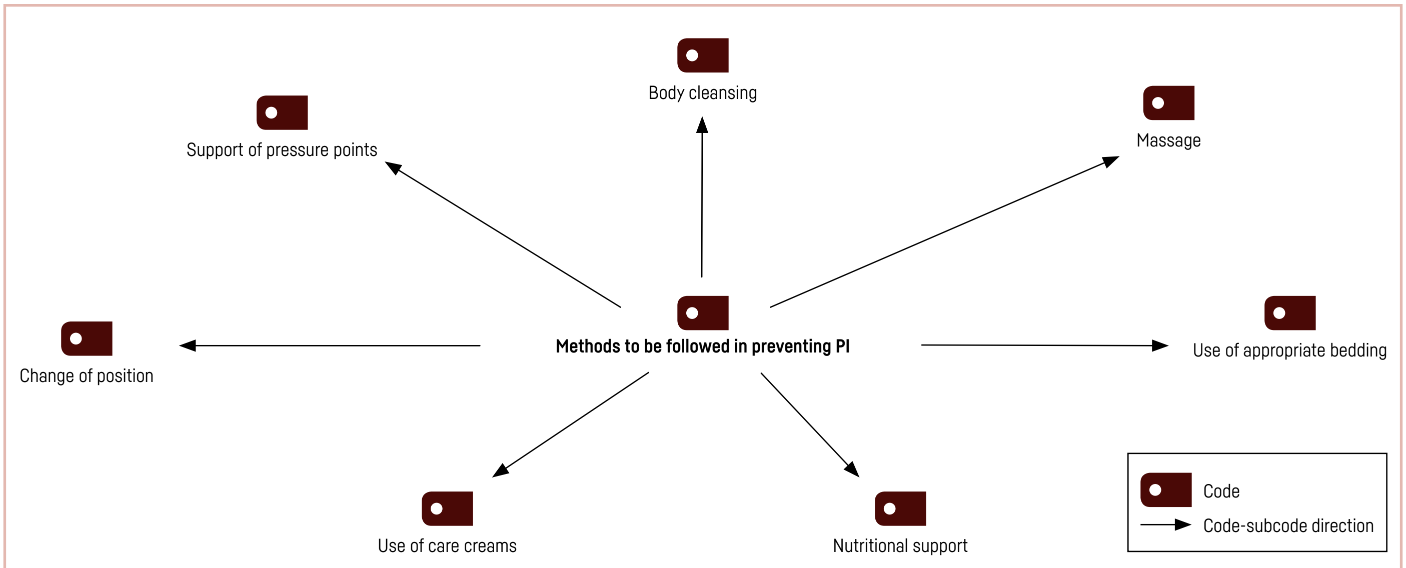

Figure 4. Code-subcode model for the methods to be followed to prevent PI in surgical intensive care units.

> "*...Also, the patient's diseases and comorbidities are very important... Even if we put the patients in the best bed and provide the best nursing care, unfortunately, wounds can still develop.*" [P10/Female/40 years old/Undergraduate]

Theme 4: Code-Subcode Model for the Methods to Be Followed to Prevent PI in Surgical Intensive Care Units

Methods of preventing PI were specified with seven sub-codes: "body cleansing," "massage," "use of appropriate bedding," "nutritional support," "use of care creams," "change of position," and "support of pressure points." These methods are important for ensuring comfort and maintaining skin integrity. Participants stated that especially changing position and regularly using skin-protective creams were effective in preventing injuries (Fig. 4).

> "*I think it is actually very easy to prevent pressure sores. If the patient does not have a circulatory disorder, if the patient is positioned every two hours at most, if the pressure points are supported and an air mattress is used, and if the necessary nutrition is provided, it is very difficult for a PI to develop.*" [P3/Male/31 years old/Undergraduate]

> "*If you do not intervene with wound care products, the possibility of progression is very high. Therefore, it is necessary to use*

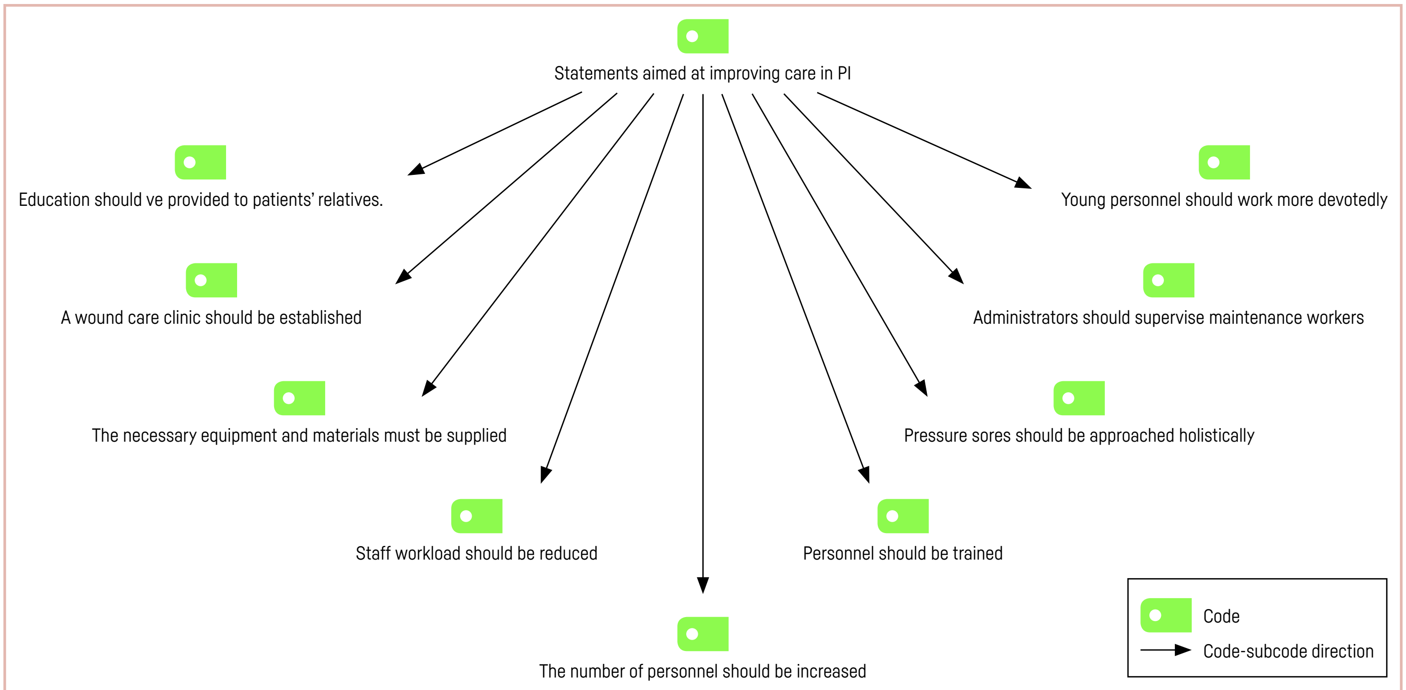

Figure 5. Code-subcode model for suggestions to improve care for PI in surgical intensive care units.

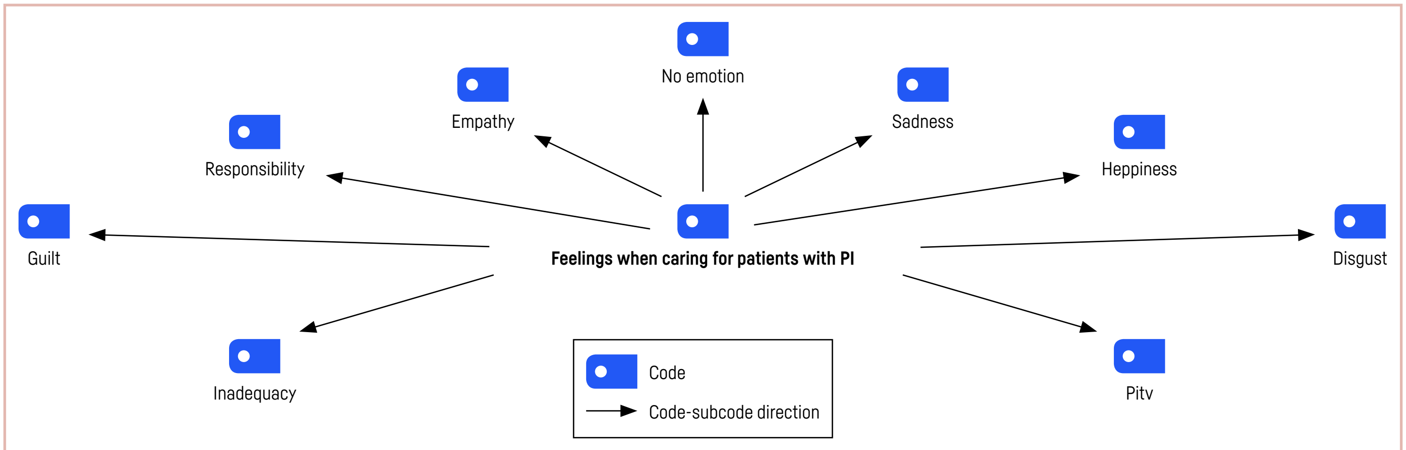

Figure 6. Code-subcode model for suggestions to improve care for PI in surgical intensive care units.

> *effective wound care products. Therefore, PI can be prevented with such products.*" [P5/Male/41 years old/Undergraduate]

> "*Apart from that, we can make the patient's diet protein-intensive. Apart from that, we can monitor albumin levels frequently.*" [P7/Male/30 years old/Undergraduate]

Theme 5: Code-subcode Model for Suggestions to Improve Care for PI in Surgical Intensive Care Units

In this model, nine suggestions for improving care were grouped under the following sub-codes: "training of relatives," "establishment of a wound care clinic," "procurement of equipment and supplies," "reducing the workload of staff," "increasing the number of staff," "training of staff," "holistic care approach," "supervision of caregivers by the administration," and "more dedication of young staff." Participants stated that appropriate training, as well as adequate staff and equipment support, would improve PI care. It was also emphasized that more training and supervision are needed, especially for young nurses, to enhance their professional knowledge and skills [Fig. 5].

> "*I would definitely want to change the number of nurses working in our unit because we are currently in surgical intensive care and are working with an insufficient number of nurses.*" [P3/Male/31 years old/Undergraduate]

> "*I would like it to be easier to access more wound care products.*" [P5/Male/41 years old/Undergraduate]

> "*It is very important to approach the patient holistically. This is teamwork, and we are one part of this team. We're the prevention and treatment pillar. What we call a team is not only the nurse, doctor, and people working there, but also the dietician, physiotherapist...*" [P10/Female/40 years old/Undergraduate]

DOI: 10.14744/jern.2025.46144
J Educ Res Nurs. 2025;22(4):266-274

Theme 6: Code-sub-code Model Regarding the Emotions Felt by Personnel Caring for Patients with PI in Surgical Intensive Care Units

Nurses indicated that they experienced various emotions while caring for patients with PI. These emotions were expressed as "sadness," "happiness," "disgust," "pity," "inadequacy," "guilt," "responsibility," "empathy," and "no emotion." These statements reveal the emotional burden nurses experience in the management of PI. In particular, feelings of pity and empathy were reported as dominant, while in some cases, feelings of inadequacy and guilt were more prominent (Fig. 6).

> "*If the patient you are caring for develops a PI, then I feel sad because I feel guilty. I look for a fault in myself. I question myself. If, despite all this, I still don't find anything wrong with myself, then my conscience is clear. However, if a PI develops, I feel guilty*." (P3/Male/31 years old/Undergraduate)

> "*Due to the experience and habits we have gained over the years, this job is now becoming routine, it is your job, and it doesn't matter whether you have it or not. It is more important for you to do the work you need to do*." (P5/Male/41 years old/Undergraduate)

> "*I don't want to provide care when I see an advanced PI because the view disgusts me and lowers my enthusiasm for working*." (P14/Female/30 years old/Undergraduate)

Discussion

In this study, nurses working in the surgical ICU stated that PIs are preventable and that when effective nursing care is provided, patients can be discharged to the ward without any wounds, even if they stay in the ICU for a long time. In the literature, it has been reported that surgery-related PI's often develop within the first 48–72 hours and that such injuries can be prevented through appropriate care addressing risk factors caused by medical equipment in surgical intensive care.[15,16] In line with this result, it is evident that nurses working in the surgical ICU should be particularly aware of PI caused by medical equipment. The findings indicate that participants take necessary precautions to prevent PI in their nursing care and demonstrate a high level of awareness.

Surgical intensive care nurses in this study also stated that patients with multiple trauma, such as those resulting from traffic accidents, are more prone to PI's due to limited positioning and immobility caused by cervical fractures. In the study by Aydın Kahraman and İpek Çoban,[17] it was reported that immobile patients in specialized units such as surgical intensive care may develop PI's due to medical devices. It is thought that while the participants' awareness of the importance of mobility and position change in preventing PI is high, they may not be able to take sufficient precautions in practice. In this regard, nurses working in ICUs should receive updated training on the importance of using support surfaces that can redistribute pressure evenly to prevent PI in immobile patients.

During the intraoperative period, surgical patients are immobile, have no sensation of discomfort, and cannot change position during the surgical intervention because they are under anesthesia and sedation.[18] Accordingly, PI's are more common in patient groups who must receive sedation in ICUs.[19] Surgical intensive care nurses in the present study stated that they used sedation, with a doctor's order, to ensure immobilization of some patients who were highly agitated due to pain related to surgery in surgical ICUs. In the study by Nedergaard et al.,[20] which examined the effect of sedation on PI formation, it was reported that the number of PI was not significantly affected in patients who did not receive sedation. In this context, it is thought that surgical intensive care nurses should increase their awareness of PI prevention in sedated patients.

The nurses participating in the study emphasized that PI originating in the operating theater frequently occurred and that the severity of these wounds tended to increase in parallel with the duration of hospitalization and treatment in the surgical ICU. This finding is consistent with the literature; for example, Katran[8] in 2015 reported that the incidence of PI among patients hospitalized in surgical ICUs for more than 11 days reached 95.9%. Such data underline that prolonged exposure to immobility and intensive care interventions significantly exacerbate the risk of PI development. In addition, participants highlighted that surgical factors (particularly patient positioning and cautery use) constitute critical determinants of PI occurrence. From this perspective, it may be argued that reliance on standard operating tables and the lack of intraoperative risk assessment contribute substantially to the problem. Therefore, a comprehensive risk assessment that considers the patient's clinical status, body mass index, type and duration of surgery, and length of ICU stay is imperative for early prevention strategies. These findings point to the need for structured protocols and interprofessional collaboration among surgical, anesthesiology, and nursing teams to ensure that high-risk patients are systematically identified and protected during surgery. Furthermore, increasing the awareness and knowledge of operating theater staff regarding perioperative risk factors is essential, as insufficient recognition of such risks may result in preventable complications. In this context, future research should focus on developing evidence-based intraoperative PI risk assessment tools and systematically evaluating the effectiveness of preventive technologies, such as pressure-redistributing surfaces and patient-specific positioning devices, in reducing the incidence of operating theater–related PI.

All the surgical intensive care nurses in the study reported that a major factor contributing to their increased workload is the lack of sufficient personnel. They emphasized that caring for obese patients is particularly challenging, as inadequate staffing negatively affects the quality and continuity of care. The participants also noted that increasing the number of nurses would allow more time to be dedicated to patient care. Supporting these findings, Ören and Dağcı[21] in 2021 identified insufficient personnel (66.3%), heavy workload (65.9%), unclear job descriptions (56.1%), exposure to risky situations (54.7%), and stress related to high-risk patient care (53.9%) as the most common problems encountered by ICU nurses. These results indicate that increasing the number of nurses may reduce workload, improve the quality of care, and consequently lower the prevalence of PI. From this perspective, adequate nurse staffing is expected to alleviate workload, enhance individualized patient care, and ultimately strengthen both care quality and patient safety. Therefore, staffing policies in surgical intensive care units should not only focus on numerical sufficiency but also prioritize skill diversity, competency-based distribution, and flexible scheduling to meet patient-specific needs.

In this study, the nurses stated that overweight and cachectic patient groups had the highest risk of developing PI. The participants noted that cachectic patients have less adipose tissue, and consequently, bone protrusions make greater contact with the skin, whereas obese patients have more adipose tissue, which increases pressure within the tissue. In a study examining the relationship between risk factors and pressure ulcers in patients whose pressure ulcer risk was determined by the Braden Scale, it was found that the majority of patients were preobese (49.2%) and that body mass index was statistically significant in the development of pressure ulcers ($p<0.01$).[22] In a study conducted by Akın and Karahan[23] in 2020, it was found that the development of facial PI was significantly higher in obese patients with chronic diseases and receiving steroid treatment. These findings are consistent with the literature. In this regard, it is evident that nurses should use advanced-technology beds to facilitate the positioning of obese patients, thereby reducing the risk of PI development. Additionally, pressure areas in cachectic patients should be supported, and up-to-date wound care products should be utilized to help reduce the prevalence of PI in ICUs.

Although the prevention of pressure sore development in the perioperative period requires multidisciplinary management,[24] nurses play a crucial role in preventing PI in healthcare settings.[25] Nurses' knowledge and attitudes toward the prevention of PI play a key role in reducing their incidence. In the present study, nurses stated that in-house training should be provided not only to nurses but also to other staff working in ICUs. In addition, they noted deficiencies in PI training within clinics and indicated that existing training programs were not very effective. In the study conducted by Çelik et al.,[26] 75% of nurses participated in in-service training for the prevention and treatment of PI, but more than 30% had not received training for over two years. In another study, it was reported that less than half of the nurses had received training in wound care and that they needed more education in this area.[27] Similarly, a study conducted by Wu et al.[28] found that nurses' general knowledge of PI prevention was at a moderate level. These findings collectively suggest that current training programs are inadequate in terms of frequency, content, and sustainability, which may compromise both nurses' competence and patient outcomes. Therefore, it is essential that wound care in surgical ICUs be delivered through a multidisciplinary team that includes a specialized wound care nurse, while also ensuring that ICU nurses receive regular, comprehensive, and evidence-based training on PI prevention. Strengthening educational strategies in this way would not only enhance nurses' skills but also contribute to reducing the incidence of PI in critical care environments.

Surgical intensive care nurses who participated in the study also stated that patients who had undergone surgical procedures and were hospitalized in intensive care should receive care in collaboration with dietitians, both to promote surgical wound healing and to prevent the development of PI. Saghaleini et al.[29] reported that zinc, protein, vitamins A, C, and E, and amino acids play an important role in the healing of PI. In a randomized controlled study by Cereda et al.,[30] it was found that wound healing accelerated in patients with PI who received nutritional support consisting of arginine, zinc, and antioxidants for eight weeks. In this regard, and in parallel with the literature, it is evident that the nutritional content determined by the nutrition nurse and dietitian, along with the patient's diet, is an important intervention in the prevention of PI.

In this study, surgical intensive care nurses reported experiencing emotions such as sadness, guilt, disgust, and pity when PI developed in patients under their care. Some participants stated that their sense of responsibility increased as the severity of the PI worsened, whereas more experienced nurses noted that, over time, they had become emotionally desensitized due to professional habituation. Participants also emphasized that a nurse "without conscience" could not work in the intensive care environment, underscoring the importance of empathy in nursing practice. While some nurses expressed satisfaction and fulfillment when providing attentive care for patients with PI, others acknowledged that the unpleasant appearance and odor of infected wounds negatively affected their ability to deliver care. These findings reveal the complex interplay between professional responsibility and emotional burden in PI management. From this perspective, it can be argued that emotional responses are inevitable in intensive care settings; however, the findings of this study suggest that despite nurses' high awareness of PI risks, preventive practices often remain insufficient. This gap indicates that emotional burden, manifesting as sadness, guilt, or disgust, may directly hinder the consistent delivery of high-quality care. Furthermore, the association repeatedly emphasized by participants between inadequate staffing and the occurrence of PI highlights that workforce shortages not only increase workload but also directly contribute to adverse patient outcomes. Therefore, interventions should not only aim to provide nurses with structured psychological support programs, peer discussion groups, and resilience training, but also address systemic issues such as staffing adequacy and workload management. Ultimately, minimizing the impact of emotional fatigue, ensuring sufficient nurse-to-patient ratios, and reinforcing evidence-based preventive measures are essential for maintaining professional objectivity, safeguarding care quality, and reducing the incidence of PI.

Limitations of the Study

The study's limitation to a single center, the relatively small number of participants, the focus solely on surgical intensive care nurses, and the reliance on self-reported data constitute important methodological limitations of the study.

Conclusion

The findings highlight three key areas for intervention in the prevention and care of PI in surgical ICUs: (1) strengthening workforce capacity by increasing the number of nurses and support staff, (2) enhancing the scope and continuity of in-service training programs, and (3) fostering multidisciplinary collaboration supported by adequate equipment, materials, and access to up-to-date wound care products. These results underscore the necessity for healthcare managers and policymakers to prioritize evidence-based workforce planning, allocate resources efficiently, and develop institutional policies aimed at sustaining high-quality care and preventing PI. The study highlights the pivotal role of structured educational strategies, adequate staffing, and interdisciplinary approaches, thereby establishing a conceptual link between the present findings and future directions for practice and policy. In this context, conducting mixed-method studies that include ICU nurses from both public and private healthcare institutions is essential to ensure methodological rigor and to enhance the validity and generalizability of the findings.

Ethics Committee Approval: The study was approved by the Karabük University Non-interventional Clinical Research Ethics Committee (Approval Number: 2023/1556, Date: 06.12.2023) and institutional permission was obtained from the Scientific Research Ethics Committee of Kastamonu Training and Research Hospital (Approval Number: E-44008972-929, Date: 24.01.2024).

Informed Consent: Verbal consent was obtained from all participating nurses prior to data collection.

Conflict of Interest: The authors have no conflicts of interest to declare.

Funding: The authors declared that this study received no financial support.

Author Contributions: Concept – S.Y., D.Y.G.; Design – S.Y., D.Y.G.; Supervision – D.Y.G.; Resource – S.Y.; Materials – S.Y.; Data Collection and/or Processing - S.Y.; Analysis and/or Interpretation - S.Y., D.Y.G.; Literature Review – S.Y.; Writing – S.Y., D.Y.G.; Critical Review – D.Y.G.

Peer-review: Externally peer-reviewed.

References

1. VanGilder C, Lachenbruch C, Algrim-Boyle C, Meyer S. The International Pressure Ulcer Prevalence™ Survey: 2006-2015: A 10-Year Pressure Injury Prevalence and Demographic Trend Analysis by Care Setting. J Wound Ostomy Continence Nurs. 2017;44(1):20–28. [CrossRef]
2. Cremasco MF, Wenzel F, Zanei SS, Whitaker IY. Pressure ulcers in the intensive care unit: the relationship between nursing workload, illness severity and pressure ulcer risk. J Clin Nurs. 2013;22(15–16):2183–2191. [CrossRef]
3. Coyer F, Gardner A, Doubrovsky A, et al. Reducing pressure injuries in critically ill patients by using a patient skin integrity care bundle (InSPiRE). Am J Crit Care. 2015;24(3):199–209. [CrossRef]
4. Tan A, Özkan M. Risk of developing pressure sore in surgical intensive care patients. PPHC. 2024;3(2):78–89. [CrossRef]
5. Shakibamehr J, Rad M, Akrami R, Rad M. Effectiveness of Tragacanth Gel Cushions in Prevention of Pressure Ulcer in Traumatic Patients: A Randomized Controlled Trial. J Caring Sci. 2019;8(1):45–49. [CrossRef]
6. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel and Pan Pacific Pressure Injury Alliance. Basınç Ülserlerinin/Yaralarının Önlenmesi ve Tedavisi: Hızlı Başvuru Kılavuzu. Turkish. Accessed October 31, 2025. https://epuap.org/download/8573/
7. İnangil D, Ertürk N, Pakdil EL, Türkoğlu İ, Torun Ö, Kabuk A. In-Person and Video-Based Education: Do They Affect Pressure Injury Knowledge in Nursing? Adv Skin Wound Care. 2024;37(11&12):1–7. [CrossRef]
8. Katran HB. The research on the incidence of pressure sores in a surgical ıntensive care unit and the risk factors affecting the development of pressure sores. JAREN. 2015;1(1):8–14. [CrossRef]
9. Sengul T, Karadag A. Determination of nurses' level of knowledge on the prevention of pressure ulcers: The case of Turkey. J Tissue Viability. 2020;29(4):337–341. [CrossRef]
10 Alshahrani B, Sim J, Middleton R. Nursing interventions for pressure injury prevention among critically ill patients: A systematic review. J Clin Nurs. 2021;30(15–16):2151–2168. [CrossRef]
11. Gocmen Baykara Z, Karadag A, Senol Celik S, et al. Impact of tailored training about pressure injuries on nurses' knowledge levels and pressure injury point prevalence: The case of Turkey. J Tissue Viability. 2021;30(4):552–558. [CrossRef]
12. Miller DM, Neelon L, Kish-Smith K, Whitney L, Burant CJ. Pressure Injury Knowledge in Critical Care Nurses. J Wound Ostomy Continence Nurs. 2017;44(5):455–457. [CrossRef]
13. Creswell JW, Creswell JD. Research design: Qualitative, quantitative, and mixed methods approaches. 4th ed. Sage Publications; 2017.
14. Merriam SB. Nitel araştırma: Desen ve uygulama için bir rehber. Turan, S, translator. Ankara: Nobel Akademik Yayıncılık; 2018:199–228.
15. Kara H, Arıkan F. Prevention of medical device related pressure injury. J Intensive Care Nurs. 2020;24(1):15–21. Turkish.
16. Karaveli S. Attitude of Nursing Students Taking Wound Course on the Prevention of Pressure Ulcers. Sağlık Akademisi Kastamonu. 2022;7(2):236–245. Turkish. [CrossRef]
17. Aydın Kahraman H, İpek Çoban G. Risk of developing medical device–related pressure ınjuries and nursing approach. GUJHS. 2024;13(1):486–493. Turkish.
18. Weng PW, Lin YK, Seo JD, Chang WP. Relationship between predisposing and facilitating factors: Does it influence the risk of developing peri-operative pressure injuries? Int Wound J. 2022;19(8):2082–2091. [CrossRef]
19. Kıraner E, Terzi B, Uzun Ekinci A, Tunalı B. Characteristics of patients with pressure wound in the intensive care units. J Intensive Care Nurs. 2016;20(2):78–83. Turkish.
20. Nedergaard HK, Haberlandt T, Toft P, Jensen HI. Pressure ulcers in critically ill patients - Preventable by non-sedation? A substudy of the NONSEDA-trial. Intensive Crit Care Nurs. 2018;44:31–35. [CrossRef]
21. Ören B, Dağcı S. The problems faced by nurses working in intensive care units. J Intensive Care Nurs. 2021;24(3):170–183. Turkish.
22. Bakanoğlu Kalkavan E, Şendir M. Evaluation relationship between risk factors and pressure

ulcers of the patients whose risk to have pressure ulcer has been determined with the Braden scale for predicting pressure ulcer risk. JHSS. 2024;7(1):28–54. Turkish. [CrossRef]

23. Akın N, Karahan E. Investigation of factors affecting pressure ulcer development frequency and formation in the face region in patients with noninvasive mechanical respiratory support. KUSBED. 2020;6(1):45–52. Turkish. [CrossRef]
24. Huang L, Yan Y, Huang Y, et al. Summary of best evidence for prevention and control of pressure ulcer on support surfaces. Int Wound J. 2023;20(6):2276–2285. [CrossRef]
25. Tayyib N, Coyer F, Lewis P. Pressure Injury Prevention in a Saudi Arabian Intensive Care Unit: Registered Nurse Attitudes Toward Prevention Strategies and Perceived Facilitators and Barriers to Evidence Implementation. J Wound Ostomy Continence Nurs. 2016;43(4):369–374. [CrossRef]
26. Çelik S, Dirimeşe E, Taşdemir N, et al. Pressure sore prevention and treatment knowledge of nurses. Med J Bakirkoy. 2017;13(3):133–139. Turkish. [CrossRef]
27. Furtado K, Voorham J, Infante P, et al. The Relationship between Nursing Practice Environment and Pressure Ulcer Care Quality in Portugal's Long-Term Care Units. Healthcare (Basel). 2023;11(12):1751. [CrossRef]
28. Wu J, Wang B, Zhu L, Jia X. Nurses' knowledge on pressure ulcer prevention: An updated systematic review and meta-analysis based on the Pressure Ulcer Knowledge Assessment Tool. Front Public Health. 2022;10:964680. [CrossRef]
29. Saghaleini SH, Dehghan K, Shadvar K, Sanaie S, Mahmoodpoor A, Ostadi Z. Pressure Ulcer and Nutrition. Indian J Crit Care Med. 2018;22(4):283–289. [CrossRef]
30. Cereda E, Klersy C, Serioli M, Crespi A, D'Andrea F; OligoElement Sore Trial Study Group. A nutritional formula enriched with arginine, zinc, and antioxidants for the healing of pressure ulcers: a randomized trial. Ann Intern Med. 2015;162(3):167–174. Erratum in: Ann Intern Med. 2015;163(12):964. [CrossRef]