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Surgical intensive care nurses' knowledge, attitudes and practices on preventing medical device related pressure injury: A cross-sectional study

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Abstract

Medical device-related pressure injury (MDRPI) is a preventable but significant problem in intensive care unit (ICU). Adequate knowledge and positive attitudes among nurses are essential to ensure early identification and prevention. This study examined surgical ICU nurses' knowledge, attitudes, and self-reported preventive practices regarding MDRPIs. This descriptive cross-sectional study was conducted between January and February 2024 in the surgical ICUs of one tertiary-level university hospital and one secondary-level public hospital in Türkiye. The study included 84 nurses. Data were collected using a nurse information form and validated instruments assessing MDRPI-related knowledge (MDRPI-KAT) and attitudes (MDRPU/I Questionnaire). The mean MDRPI-KAT score was 8.98 ± 2.55 , and the mean MDRPU/I total score was 20.79 ± 6.69 . Knowledge scores showed a weak positive association with overall attitude ($r = 0.231$, $p = 0.035$) and a very weak but significant association with the attitude toward care subscale ($r = 0.329$, $p = 0.002$). Surgical ICU nurses demonstrated insufficient knowledge and negative attitudes toward MDRPI prevention, despite reporting frequent preventive practices. Regular structured training programs and evidence-based clinical protocols are essential to improve MDRPI prevention in ICUs.

Keywords: Medical device-related pressure injury, intensive care unit, nursing, knowledge, pressure injury prevention

Introduction

Medical device-related pressure injury (MDRPI) refers to tissue damage that develops in association with a diagnostic or therapeutic device, typically mirroring the configuration of the device in contact with the patient. The National Pressure Injury Advisory Panel (NPIAP) formally described MDRPI as a pressure injury (PI) attributable to the use of such devices [1]. It has been reported that nearly one-third of PIs are associated with medical devices, and patients who require medical device support have an approximately 2.4-fold higher risk of developing MDRPI [2]. The most common sources of MDRPIs are various other devices. These include nasal oxygen cannula, nasogastric tube, endotracheal tube, urinary catheter, splint, non-invasive ventilation mask, intravenous catheter, arterial line, pulse oximeter, blood pressure cuff, compression stockings and dressing systems [3–5]. Cardiovascular disease history,

vasopressor use, duration of stay in the intensive care unit (ICU) ≥ 22 days and the need for mechanical ventilation have been reported as independent risk factors for MDRPIs [6].

Unlike conventional PIs, MDRPIs may develop not only on the skin but also on mucous membranes, particularly those of the gastrointestinal and respiratory systems. The primary distinction between skin and mucosal injuries lies in the structural characteristics of mucosal tissue. In contrast to the skin, the majority of mucosal surfaces do not have keratinised epithelium. This multi-layered layer of squamous epithelium is connected to the submucosa by a layer of connective tissue [7]. Because mucosal tissue layers are extremely thin and closely resemble one another, it is challenging to determine the specific layer involved through visual assessment alone. Moreover, injuries confined to the mucosa do not extend to deeper structures such as muscle or bone. Owing to these anatomical and structural

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differences, the staging system applied to dermal PIs is not appropriate for mucosal PIs. [8,9]. Over the past decade, research focusing on MDRPIs has increased substantially. Earlier reports on MDRPIs were limited; however, more recent observational studies and systematic reviews have provided broader epidemiological data [2,6]. These studies indicate that MDRPIs occur across different age groups and care settings, with reported incidence and prevalence rates varying widely depending on patient characteristics, clinical environment, and device type. In particular, ICUs have been identified as high-risk settings due to the frequent and prolonged use of medical devices in critically ill patients [4,10]. Despite growing awareness of MDRPIs among healthcare professionals, prevention efforts may be inconsistently prioritized in daily clinical practice. Medical devices are indispensable for monitoring and treatment in ICUs; therefore, preventing MDRPIs should be considered an integral component of overall PI prevention strategies rather than a secondary concern [6]. Nurses, as the primary providers of continuous bedside care, play a central role in identifying early signs of device-related tissue damage and implementing timely preventive interventions [11]. Previous studies have emphasized that nurses' knowledge, attitudes, and clinical practices are closely linked to effective PI prevention [12,13]. Insufficient knowledge and limited awareness of MDRPI-specific risk factors may contribute to delayed recognition and increased PI rates in ICU. While several investigations have examined nurses' attitudes and practices regarding PI prevention in general, research specifically addressing MDRPI-related knowledge and attitudes remains comparatively limited, particularly in surgical ICUs [11,14,15].

Accordingly, this study aimed to assess the knowledge levels, attitudes, and self-reported practices of nurses working in surgical ICUs regarding the prevention of MDRPI, and to examine the relationship between knowledge and attitudes.

Material and Methods

Study Design and Research Questions

This study employed a descriptive cross-sectional design and was conducted in the surgical ICUs of one tertiary-level university hospital and one secondary-level public hospital between January and February 2024. STROBE guidelines were followed to structure the reporting of this observational study.

The study aimed to answer the following research questions:

- I. What is the level of knowledge among surgical ICU nurses regarding the prevention of MDRPIs?
- II. What are the attitudes of surgical ICU nurses toward the prevention of MDRPIs?
- III. What are the nursing practices implemented by surgical ICU nurses to prevent MDRPIs?
- IV. Is there an association between nurses' knowledge levels and their attitudes toward MDRPI prevention?

Participants

All nurses employed in the surgical ICUs during the study period constituted the accessible population (N = 93). A census approach was adopted, and no sampling method was applied. All eligible nurses were invited to participate in the study. A total of 84 nurses agreed to participate, yielding a response rate of 90.3%. Eligibility criteria included: (1) being a registered nurse, (2) working in a surgical ICUs (surgical ICU, postoperative ICU, anesthesia ICU, or cardiovascular surgery ICU), and (3) accepting to participate in the study.

Data Collection Procedure

Data were collected by the researchers through self-administered questionnaires distributed to eligible nurses working in the participating units. Nurses who consented to take part in the study were informed about the purpose of the research and were asked to complete the questionnaires carefully and fully. Completion of the data collection forms required approximately 15 minutes.

Data Collection Tools

Three instruments were administered: a demographic/practice form, a knowledge test, and an attitude questionnaire.

Nurse Introduction Form

The form was developed by the researchers based on relevant literature. It includes items related to nurses' sociodemographic and professional characteristics, as well as questions addressing routine nursing practices aimed at reducing the risk of MDRPIs [3,9,15,16].

Medical Device-Related Pressure Injury Knowledge Level Assessment Test (MDRPI-KAT)

The MDRPI-KAT was developed by Dallı and Girgin in 2023 [17]. The instrument consists of 16 multiple-choice items covering six thematic areas: diagnosis and etiology, staging and observation, medical device selection and suitability, skin assessment, prevention, and special patient groups. Each correct response is scored as 1 point, while incorrect or unanswered items receive 0 points, yielding a total possible score ranging from 0 to 16. In the original study by Dallı and Girgin's study, the Cronbach's alpha value of the scale was found to be 0.77 [17]. The Cronbach's alpha value was 0.74 in this study.

Attitude towards Medical Device-Related Pressure Ulcers/Injuries Questionnaire (MDRPU/I Questionnaire)

It was originally developed by Fereidouni et al., and its Turkish validity and reliability were established by Küçükkelepçe et al [18,19]. The questionnaire comprises 11 items rated on a five-point Likert scale and includes two subscales: attitude toward MDRPI prevention and attitude toward MDRPI care. Total

scores range from 11 to 55. Higher scores indicating more positive attitudes. Score ranges of 11–25, 26–40, and 41–55 represent negative, neutral, and positive attitudes, respectively. In the study by Küçükkelepçe et al, the Cronbach’s alpha value of the scale was found to be 0.92 [19] . In this study, Cronbach’s alpha value was 0.87.

Statistical Analysis

Descriptive statistics were calculated to describe the dataset. Categorical variables are presented as number (n) and percentage (%), whereas continuous variables are expressed as mean ± standard deviation (SD). The Kolmogorov–Smirnov test indicated that continuous variables did not significantly deviate from normality (all $p > 0.05$). Group differences were tested with an independent-samples t test for two groups and with one-way ANOVA for analyses involving three or more groups. Associations between scale scores were examined using Pearson correlation analysis. Statistical significance was set at $p < 0.05$.

Ethical Considerations

Ethical approval was obtained from the Trakya University Non-Interventional Research Ethics Committee (date: 27 November 2023; decision no: 18/28). Institutional permissions were also secured from the administrations of the participating hospitals.

All nurses were informed about the study procedures, and written informed consent was obtained. No personally identifiable information was collected, and confidentiality and anonymity were ensured throughout the research process. Participants were informed of their right to withdraw from the study at any stage without penalty. As the study involved survey-based data collection from healthcare professionals and did not include patient interventions, it was considered to pose minimal risk.

Results

Sociodemographic and Professional Characteristics of ICU Nurses

The mean age of the nurses was 30.08 ± 7.59 years. Of the participants, 65.5% were female, 70.3% held an undergraduate degree, and 42.9% worked in surgical ICUs. In addition, 29.8% had 1–5 years of nursing experience. With respect to clinical exposure, 44.0% of nurses reported frequently encountering patients with pressure injuries. The most commonly reported source of information on PI prevention was formal nursing education (36.9%), followed by in-service training and physician recommendations. Almost half of the participants (46.4%) indicated that they had received training on PI prevention within the past 7–12 months, and 60.7% stated that they applied the knowledge gained from training in their daily clinical practice (Table 1).

Table 1. Sociodemographic and professional characteristics of nurses (n = 84)

Variables	Min-Max	Mean ± SD
Age (years)	20-45	30.08 ± 7.59
	n	(%)
Gender		
Female	55	65.5
Male	29	34.5
Education level		
Health vocational high school	9	10.7
Undergraduate	59	70.3
Postgraduate	16	19.0
Work experience (years)		
0-5	25	29.8
6-10	21	25.0
11-15	19	22.6
16-20	13	15.5
≥ 21	6	7.1
The intensive care unit		
Surgical ICU	36	42.9
Cardiovascular surgery ICU	19	22.6
Postoperative ICU	16	19.0
Anaesthesia ICU	13	15.5
Frequency of encountering PI patients		
Almost always	21	25.0
Frequently	37	44.0
Sometimes	21	25.0
Hardly ever	5	6.0
Sources of information on PI prevention		
Information received during nursing education	31	36.9
In-service training	12	14.3
Practices of experienced nurses	9	10.8
Physician recommendations	12	14.3
Journals, books	7	8.3
Conference/ congress	6	7.1
Internet	7	8.3
Time since last training on PI prevention		
0-6 months	30	35.7
7-12 months	39	46.4
≥ 13 months	15	17.9
Reflecting training knowledge into practice		
Yes	51	60.7
No	33	39.3

Min: Minimum, Max: Maximum, SD: standard deviation, n: number

Nursing Practices for Reducing the Risk of MDRPI

Analysis of self-reported nursing practices showed that preventive measures related to MDRPI were frequently implemented. More than one-third of nurses (34.5%) stated that they almost

always ensured that the medical device used was appropriate in terms of type, size, and shape, while 56.0% reported doing so frequently. Correct application of medical devices in accordance with manufacturer instructions was reported as frequent or almost always by 95.2% of participants. Similarly, 59.6% of nurses indicated that they frequently ensured proper fixation of medical devices, and 53.6% reported routinely assessing the skin under or around medical devices for early signs of PI. Regular repositioning of the device or the patient to reduce interface pressure was performed frequently or almost always by the majority of participants (88.1%). In addition, more than half of the nurses (56.0%) reported that they frequently removed medical devices as soon as it was medically appropriate (Table 2).

Table 2. Nursing practices to reduce the risk of MDRPI (n = 84)		
Practices	n	%
Ensuring appropriate device type/size		
Almost always	29	34.5
Frequently	47	56
Sometimes	8	9.5
Correct application according to instructions		
Almost always	34	40.5
Frequently	46	54.7
Sometimes	4	4.8
Correct fixation of the medical device		
Almost always	28	33.3
Frequently	50	59.6
Sometimes	6	7.1
Routine skin assessment under/around devices		
Almost always	35	41.7
Frequently	45	53.6
Sometimes	4	4.8
Regular repositioning to reduce interface pressure		
Almost always	36	42.9
Frequently	38	45.2
Sometimes	9	10.7
Hardly ever	2	1.2
Use of prophylactic protective cover		
Almost always	23	27.4
Frequently	38	45.2
Sometimes	22	26.2
Hardly ever	1	1.2
Removing the medical device as soon as medically possible		
Almost always	29	34.5
Frequently	47	56
Sometimes	8	9.5

Knowledge and Attitudes Regarding MDRPI Prevention

The mean MDRPI-KAT score of the nurses was 8.98 ± 2.55 . The mean total score of the MDRPU/I Questionnaire was $20.79 \pm$

6.69 . When subscale scores were examined, the mean score for the Attitude Toward MDRPI Prevention subscale was 12.76 ± 3.69 , while the mean score for the Attitude Toward MDRPI Care subscale was 8.03 ± 3.56 (Table 3).

Table 3. Mean scores of MDRPI-KAT and MDRPU/I Questionnaire			
Scales/Subscales	Scale range	Min-Max.	Mean $\pm$ SD
MDRPI-KAT	0-16	2-13	8.98 ± 2.55
MDRPU/I Questionnaire	11-55	11-36	20.79 ± 6.69
Attitude toward MDRPI prevention subscale	6-30	6-19	12.76 ± 3.69
Attitude toward MDRPI care subscale	5-25	5-19	8.03 ± 3.56
MDRPI-KAT: Medical Device-Related Pressure Injury Knowledge Level Assessment Test; MDRPU/I Questionnaire: Medical Device-Related Pressure Ulcer/Injury Questionnaire; Min: minimum, Max: maksimum, SD: standard deviation			

Correlation analysis revealed a weak but statistically significant positive relationship between the MDRPI-KAT total score and the MDRPU/I Questionnaire total score ($r = 0.231$, $p = 0.035$). In addition, a very weak positive correlation was observed between knowledge scores and the Attitude Toward MDRPI Care subscale ($r = 0.329$, $p = 0.002$) (Table 4).

Table 4. The relationship between MDRPI-KAT and MDRPU/I Questionnaire and its subscales				
Scales and subscales	Test statistics	MDRPU/I Questionnaire	Attitude toward MDRPI prevention subscale	Attitude toward MDRPI care subscale
MDRPI-KAT	r	0.231	0.100	0.329
	p	0.035	0.366	0.002
MDRPI-KAT: Medical Device-Related Pressure Injury Knowledge Level Assessment Test; MDRPU/I Questionnaire: Medical Device-Related Pressure Ulcer/Injury Questionnaire; r: Pearson correlation analysis, $p < 0.05$				

Male nurses had significantly higher mean MDRPU/I Questionnaire scores and Attitude Toward MDRPI Care subscale scores compared with female nurses ($p = 0.031$ and $p = 0.002$, respectively). In contrast, female nurses had significantly higher MDRPI-KAT scores compared with male nurses ($p = 0.007$). Nurses with postgraduate education had significantly higher Attitude Toward MDRPI Care scores than those with undergraduate education ($p = .012$). Nurses who frequently encountered PI patients had significantly higher MDRPU/I Questionnaire total scores ($p = 0.03$) and higher Attitude Toward MDRPI Prevention subscale scores ($p = 0.014$) compared with those who encountered such patients only sometimes. No statistically significant differences were identified for other sociodemographic or professional variables ($p > 0.05$) (Table 5).

Table 5. Comparison of Nurses' Characteristics With MDRPI-KAT and MDRPU/I Scores

Sociodemographic and professional characteristics		MDRPI-KAT	MDRPU/I Questionnaire	Attitude toward MDRPI prevention subscale	Attitude toward MDRPI care subscale
Gender	Female	9.60 ± 2.02	19.50 ± 5.50	12.45 ± 3.44	7.05 ± 2.66
	Male	7.82 ± 3.04	23.24 ± 8.05	13.34 ± 4.12	9.89 ± 4.31
	t	2.881	-2.236	-1.051	-3.238
	p	0.007	0.031	0.297	0.002
Education level	Health vocational high school	8.88 ± 2.92	18.44 ± 3.04	12.22 ± 2.53	6.22 ± 1.71
	Undergraduate	8.72 ± 2.62	21.81 ± 7.41	13.03 ± 4.03	6.31 ± 1.92 ^a
	Postgraduate	10.00 ± 2.75	18.37 ± 4.03	12.06 ± 2.83	8.77 ± 3.86 ^b
	F	1.590	2.361	0.536	4.694
	p	0.210	0.101	0.587	0.012 , b> a
Work experience (years)	0-5	8.24 ± 2.87	22.84 ± 5.26	13.56 ± 4.10	9.28 ± 2.65
	6-10	9.71 ± 1.67	20.90 ± 5.72	12.76 ± 3.25	8.14 ± 2.97
	11-15	8.68 ± 2.47	20.42 ± 4.77	13.42 ± 2.73	7.00 ± 2.76
	16-20	9.46 ± 3.20	17.38 ± 5.07	10.30 ± 4.28	7.07 ± 2.14
	≥ 21	9.50 ± 2.07	20.50 ± 5.46	12.76 ± 3.44	7.83 ± 2.48
	F	1.213	1.481	1.965	1.434
	p	0.312	0.216	0.108	0.231
ICU	Surgical ICU	9.19 ± 2.30	21.36 ± 6.87	13.02 ± 3.67	8.33 ± 3.77
	Cardiovascular surgery ICU	8.94 ± 2.87	19.26 ± 5.84	12.21 ± 3.77	7.05 ± 2.77
	Postoperative ICU	8.50 ± 2.50	22.31 ± 5.18	13.25 ± 4.00	9.06 ± 3.43
	Anaesthesia ICU	9.07 ± 2.98	19.61 ± 6.85	12.23 ± 3.49	7.38 ± 3.07
	F	0.273	0.822	0.377	1.157
	p	0.845	0.486	0.770	0.332
Frequency of encountering PI patients	Almost always	7.60 ± 3.50	23.00 ± 5.61	14.00 ± 2.44	9.00 ± 3.67
	Frequently	8.38 ± 2.13	23.57 ± 5.08	14.19 ± 3.58	9.38 ± 3.87
	Sometimes	9.75 ± 2.47	18.51 ± 6.35	11.32 ± 3.66	7.18 ± 3.41
	Hardly ever	8.57 ± 2.61	21.52 ± 6.69	13.57 ± 3.37	7.95 ± 3.26
	F	2.296	3.127	3.782	1.872
	p	0.084	0.030	0.014	0.141
Sources of information on PI prevention	Information received during nursing education	8.96 ± 2.35	20.70 ± 5.92	12.74 ± 3.79	7.96 ± 3.70
	In-service training	9.58 ± 2.39	22.00 ± 5.29	13.91 ± 2.46	8.08 ± 3.44
	Practices of experienced nurses	8.22 ± 2.81	19.33 ± 4.28	12.00 ± 3.74	7.33 ± 3.27
	Physician recommendations	9.58 ± 2.90	19.25 ± 4.22	11.50 ± 2.05	7.75 ± 2.52
	Journals, books	8.57 ± 2.93	22.71 ± 3.08	13.00 ± 2.08	9.71 ± 2.34
	Conference/ congress	9.66 ± 2.81	20.66 ± 2.18	14.00 ± 2.00	6.66 ± 2.58
	Internet	7.85 ± 2.48	21.85 ± 3.54	12.71 ± 3.34	9.14 ± 2.25
	F	0.667	0.352	0.592	0.573
	p	0.677	0.906	0.736	0.751
Time since last training on PI prevention	0-6 months	8.60 ± 2.96	20.30 ± 5.19	12.40 ± 3.88	7.90 ± 2.79
	7-12 months	8.76 ± 2.42	21.46 ± 5.80	13.15 ± 3.60	8.30 ± 2.77
	≥ 13 months	10.33 ± 1.44	20.06 ± 5.49	12.46 ± 3.70	7.60 ± 2.55
	F	2.676	0.359	0.404	0.242
	p	0.075	0.700	0.668	0.785
Reflecting training knowledge into practice	Yes	9.00 ± 2.45	20.82 ± 6.47	12.96 ± 3.50	7.86 ± 3.54
	No	8.96 ± 2.73	20.75 ± 7.11	12.45 ± 4.00	8.30 ± 3.63
	t	0.053	0.044	0.611	0.881
	p	0.958	0.965	0.543	0.584

MDRPI-KAT: Medical Device-Related Pressure Injury Knowledge Level Assessment Test; MDRPU/I Questionnaire: Medical Device-Related Pressure Ulcer/ Injury Questionnaire; t: Independent-Samples t-test. F: One Way ANOVA test, p < 0.05

Discussion

ICU care involves the use of numerous medical devices, which increases patients' vulnerability to device-related complications and adverse events [4,10]. Therefore, ICU nurses have a greater responsibility to learn about and prevent MDRPIs [20]. In present study, the knowledge level of ICU nurses was analysed using MDRPI-KAT. A specific success score value has not been determined in MDRPI-KAT score evaluation [17]. A 60% correct response rate was generally used to define acceptable knowledge [21,22]. In this study, the cut-off point for the definition of an acceptable level was 60%. The findings showed that the mean MDRPI-KAT score corresponded to a correct response rate of 56.1%, suggesting that nurses' knowledge regarding MDRPI prevention was below the desired level. In a study conducted on ICU nurses in Turkey, the correct response rate of the MDRPI knowledge level questionnaire was 68.4% [14]. In studies conducted in China, MDRPI knowledge levels of nurses were found to be higher with a correct response rate of 73.1- 82.81% [11,15,20,23]. This may be explained by the fact that most of the Chinese ICU nurses had received MDRPI training previously, whereas in this study, although the nurses had PI training, they had not received MDRPI prevention-specific training.

In this study, MDRPU/I Questionnaire, which is specific to MDRPI, was used to evaluate the attitudes of nurses [19]. It was observed that the mean score of the attitude scale of ICU nurses was 20.79 ± 6.69 , that is, the attitude of the nurses was negative.

Many studies in the literature have examined nurses' efforts to prevent pressure injuries. In a systematic review including 33 studies, nurses' attitudes toward pressure injury prevention were assessed using various attitude measurement instruments [24]. It was found that the average attitude score in the studies was 69% ($\pm 14\%$) and in 46% of the studies, nurses' attitude scores were $\geq 75\%$ [24]. In studies examining the attitudes of nurses towards PI prevention in Turkey, it was found that the attitude was positive [12,13,25]. However, it is thought that the reason for the negative attitude in this study is that the MDRPI concept is new for nurses and nurses' knowledge about MDRPI is insufficient. Conceptually, it is necessary to question whether attitude constitutes a valid indicator of clinical practice and to acknowledge that an observed association with behavior does not necessarily mean that attitude accurately reflects actual clinical practice [24]. Often seen as a precursor to behaviour, attitudes can be formed from an individual's past and present experiences. Many factors such as experience, education, motivation, personality, environment and trust also influence attitude [18,24]. In order for ICU nurses to recognise the concept of MDRPI, training on this subject, updating their knowledge, increasing their awareness and experience in clinical practice may positively affect their attitudes [12,13,25].

In the study, it was found that nurses' practices for the prevention of MDRPI were at the desired level. In all of the questions asked to evaluate the practices of the nurses, the most common answers were 'frequently' and 'almost always'. These results show that nurses perform the necessary practices to prevent MDRPI. However, it should be noted that these results are based on the nurses' statements and do not include clinical observations. In studies examining the practices of nurses for the prevention of MDRPI, it was found that the practices of nurses were adequate and at the desired level [11,15,23,26].

Limitations

The study was carried out in two hospitals and only in nurses working in the surgical ICU. The results regarding the nurses' practices to prevent MDRPI were based on the nurses' declaration, no clinical observation, file review or MDRPI questioning of patients was performed.

Conclusions

This study demonstrated that nurses working in surgical ICUs had insufficient knowledge and generally negative attitudes toward the prevention of MDRPI, despite reporting frequent implementation of preventive practices. A positive association was identified between nurses' knowledge and attitudes, highlighting the interrelated nature of cognitive and affective components in MDRPI prevention.

These findings suggest that routine clinical practices alone may not be sufficient to ensure effective and sustainable prevention of MDRPIs. Nursing management should therefore prioritize structured and MDRPI-specific educational initiatives aimed at improving nurses' knowledge and awareness. In addition, facilitating access to evidence-based guidelines, integrating MDRPI-focused interventions into nursing observation forms, and establishing standardized clinical protocols may contribute to strengthening preventive efforts in ICUs.

This study's findings may guide the design of targeted educational initiatives and institutional policies aimed at strengthening patient safety in intensive care settings. Further research involving nurses from diverse clinical settings and incorporating observational methods is recommended to provide a more comprehensive understanding of MDRPI prevention practices.

Ethical Approval

The study was approved by the Trakya University Non-interventional Research Ethics Committee (Approval Date: 27.11.2023; Decision No: 18/28) and was conducted in accordance with the principles of the Declaration of Helsinki.

Patient Consent

Patient consent was not required because the study involved only nurses, and no patient data or identifiable patient information were collected. eklenebilir.

Conflict of Interest

The authors confirm the absence of any conflicts associated with this work.

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