

ASSESSMENT OF NURSES KNOWLEDGE REGARDING PRESSURE ULCER PREVENTION IN INTENSIVE CARE UNIT

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Abstract

Background: The Pressure ulcer (PU), is a skin injury, constitute a major global healthcare issue with significant clinical and economic repercussions. They are localized injuries to the skin and underlying soft tissue, primarily over bony prominences, caused by intense prolonged pressure and shear forces. These injuries lead to severe patient consequence including debilitating pain, increased risk of serious infections, extended hospital stays by an estimated 4 to 30 days, higher morbidity and mortality rates, and a substantially reduced quality of life

Methodology: This study was Descriptive Analytical study design and conducted at PMCH Nawabshah from September to November 2025, and total randomly 100 nurses were enrolled following the inclusion criteria. .

Result: The majority of the participants have good knowledge 60 (60%), moderate knowledge 32 (32%), and 8 (8%) participants have poor knowledge. Most of them were aged 25 to 35 years 77 (77.0%), and 36 to 45 years 17 (17.0%). Furthermore, majority of the participants were male 60 (60.00%), and female 40 (40.00%). Moreover, BSN 71 (71.0%) Diploma in Nursing 25 (25.0%), and remaining have MSN or Higher 4 (4.0%) have professional Nursing education.

Conclusion: In this study revealed that the overall knowledge level of nurses was satisfactory. The majority of the participants (60%) demonstrated good knowledge level regarding pressure ulcer prevention, this study indicates that most of the participants adequate understanding and awareness.

Introduction:

The pressure ulcer (PU) prevention among ICU nurses. The PU caused by factors like immobility, malnutrition, and shearing forces are preventable, remain a major risk for critically ill patients (1). Patients admitted to intensive care units (ICUs) are particularly vulnerable to pressure ulcer due to immobility, chronic comorbidities, reduced

sensory perception, and prolonged exposure to pressure and shear forces. Pressure ulcers are localized injuries to the skin and underlying tissue, usually occurring over bony prominences or related to medical devices, and are classified according to the depth and severity of tissue damage (2). The heavy workload, and lack of institutional support are the main barriers

preventing nurses from using pressure ulcer risk assessment scales (3). The assessed knowledge of intensive care unit (ICU) nurses regarding pressure injury prevention, further, nurses had an overall poor level of knowledge, with an average score of 42.16%, particularly in the areas of pressure injury prevention and classification (4). The knowledge, attitudes, and perceived barriers toward pressure ulcer prevention among critical care nurses in people's medical hospital (5) (6). The assess nurses' performance and recognized barriers in preventing pressure ulcers among critically ill patients in people medical hospital Nawabshah (7) (8). Nurses knowledge and practices regarding pressure ulcer prevention were inadequate, particularly in evidence-based preventive measures. Nurses need to strengthen clinical awareness and improve application of prevention strategies to reduce pressure ulcer risk in hospitalized patients (9) (10) (11). Regular training programs, and clinical guidelines to improve nurses' knowledge and enhance pressure ulcer prevention practices in critical care. The pressure ulcers highly result in consistent and evidence-based nursing prevention practices, making effective nursing care essential for their prevention (12) (13) (14). The most critical care nurses had satisfactory pressure ulcer prevention practices, but heavy workload, staff shortages, and limited resources were major barriers. The reducing these barriers is essential to improve quality of care and prevention outcomes (15) (16) (17). The national wide study is that critical care nurses were significantly weak in pressure ulcer treatment knowledge than prevention, especially in staging and dressing selection. It showed that clinical decision-making gaps, not just awareness, limit effective pressure injury management (18) (19) (20). This is important that more than 90% of nurses did not meet the acceptable knowledge level for pressure ulcer prevention, prevention is a role nursing responsibility found that training and longer clinical experience significantly improved both knowledge and attitudes, and more knowledge led to better preventive attitudes (21) (22).

Material & Methods: This study was descriptive analytical study, which is conducted from September to November 2025 at Intensive Care Units of people medical college hospital Nawabshah. The sample size was determined using the Rao soft calculator 95% Confidence level, 10% margin of error and 50% response distribution, 100 nurses were targeted for study.

Inclusion Criteria:

1. Registered nurses currently working in the Intensive Care Units of PMCH Nawabshah.
2. Both male and female nurses.
3. Nurses with at least 1 year of ICU experience.
4. Nurses holding a Diploma, BSN, Post RN, or MSN or higher degree in nursing.
5. Nurses who provide direct patient care.

Exclusion Criteria:

1. Nursing students, interns, or administrative staff not involved in direct patient care.
2. Nurses on long-term leave or not actively working in ICU during data collection.
3. Nurses unwilling to participate in the study.

Tools for data collection: A self-designed questionnaire was used in this study, Demographic Information Age, gender, qualification, years of nursing and ICU experience, and prior PU training. Knowledge Questions 6 multiple-choice and questions covering six domains (etiology, risk assessment, skin care, nutrition, repositioning, preventive devices). Self-administered questionnaires were distributed during breaks or non-peak shift hours to minimize disruptions. Nurses completed the questionnaire in a private setting, with follow up reminders to ensure high response rates. Informed consent was obtained prior to participation. Data was analyzed, Frequencies, percentages, means, and standard deviations was used to summarized demographic characteristics of the participants age, gender, educational qualification, and ICU experience and to

describe nurses' knowledge scores regarding pressure ulcer prevention. These statistics helped provide a clear overview of the distribution and central tendency of the collected data. The Chi-square and kendells test was applied to determine the association between categorical variables, such as gender and level of knowledge (good,

moderate, or poor). An Independent was used to compare mean knowledge scores among groups based on demographic and professional variables such as education level and years of ICU experience. A p-value of less than 0.05 was considered statistically significant.

Result:

Table No: 1 Knowledge level of nurses on pressure ulcer prevention:

Knowledge level	Frequency	Percentage (%)
Poor knowledge	8	(8%)
Moderate knowledge	32	(32%)
Good knowledge	60	(60%)
Total	100	(100%)

The majority of the participants have good knowledge 60 (60%), then moderate knowledge 32 (32%), and 8 (8%) participants have poor knowledge.

Table no: 2 Distribution of age of Subject:

Age	Frequency	Percentage
25 to 35	77	77.0%
36 to 45	17	17.0%
46 to above	6	6.0%

Most of them were aged 25 to 35 years 77 (77.0%), followed by 36 to 45 years 17 (17.0%), and above were 6 (6.0%).

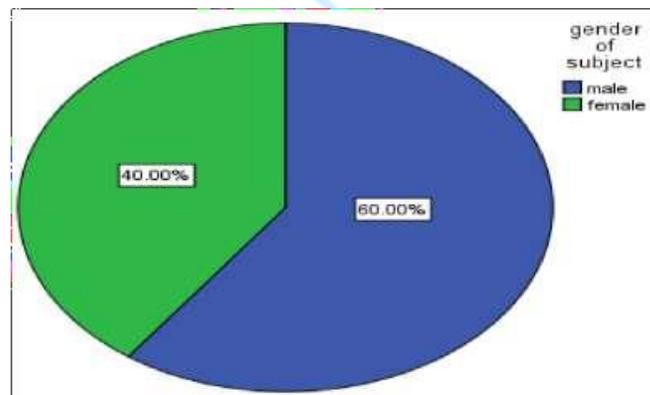


fig:1 Distribution of gender of subject:

Majority of the participants were male 60 (60.00%) , than female 40 (40.00%).

Table no:3 Distribution of qualification of subject:

Qualification	Frequency	Percentage
Diploma in Nursing	25	25.0
BS Nursing	71	71.0
MSN/ MSPH	4	4.0
Total	100	100.0

Majority of the participants qualification were BSN 71 (71.0 %), Diploma in Nursing 25 (25.0%), and remaining have MSN or Higher 4 (4.0%).

Table no :4 Distribution of total years of nursing experience and ICU experience

Experience	Mean	Min	Max	Mode	S.D ₊
Total Professional Experience	7.8400	1.00	31.00	5.00	4.69412
ICU experience	3.0300	1.00	14.00	1.00	2.53244

Total years of nursing experience of participants were, mean (7.8400), minimum (1.00), maximum (31.00), mode (5.00) and S.D (4.69412).

Years of ICU experience of participants were, mean (3.0), minimum (1.00), maximum (14.00), mode (1.00) and S.D (2.53244).

Table no: 5 Age of subject compare with knowledgeable Questions:

S.No	Item	Percentage	P.value
1.	Have you received any training on pressure ulcer prevention? Yes No	51 (51%) 49 (49%)	.705
2.	The main cause of pressure ulcer is? a) Poor Diet b) Lack of Mobility c) High Blood Pressure d) Regular exercise	14 (14%) 84 (84%) 1 (1%) 1 (1%)	.096
3.	The first sign of a pressure ulcer is? a) Redness b) Open wound c) Swelling d) bullish Skin	91 (91%) 5 (5%) 1 (1%) 3 (3%)	.003
4.	Most common area for pressure ulcer are? a) Abdomen b) Elbows c) Heels and sacrum d) Chest	2 (2%) 8 (8%) 88 (88%) 2 (2%)	.022
5.	A bed - ridden patient should be repositioned? a) Once daily	5 (5%)	

b)	Every 2 hours	87 (87%)	.844
c)	Only when in pain	8 (8%)	
d)	Once weekly	0 (0%)	
6.	Which action is wrong for prevention?		
a)	Keeping skin clean and dry	28 (28%)	
b)	Using pillow under pressure point	9 (9%)	.088
c)	Massaging bony areas	60 (60%)	
d)	Checking skin regularly	3 (3%)	

Item no:1 Most of the participants who receive training on pressure ulcer prevention select option Yes (51%), and some participants select option No (49%). this study statistically not ($p = .705$).

Item no:2 The main cause of pressure ulcer is ,most of the participants who select option lack of mobility (84%) ,than some participants select poor diet (14%), high blood pressure (1%),and regular exercise (1%). This study statistically not significant ($p = .096$).

Item no : 3 Majority of the participants were say the first sign of pressure ulcer is redness that does not go away on pressure (91%) , than some participants were select option open wound (5%) , black skin (1%) and swelling (3%). This study statistically significant ($P= .003$).

Item no: 4 Most common area for pressure ulcer are, majority of the participants were select

option heels and sacrum (88%) and some of the participants choose option Abdomen (2%) , Elbows (8%), and chest (2%). This study statistically significant ($P=.022$).

Item no:5 A bed-ridden patient should be repositioned, the majority of the participants were select option Every 2 hours (87%) than some participants select option Once daily (5%) , only when in pain (8%), and once weekly (0%), in out of 100 participants. This study statistically not significant ($P= .844$).

Item no: 6 Which action is wrong for prevention. In this study majority of participants were select option Massaging bony area (60%) and some participants were select option keeping skin clean and dry (28%), using pillow under pressure point (9%) and Checking skin regularly (3%). This study statistically not significant ($P= .088$).

Table no: 6 Gender of subject compare with knowledgeable question:

S.No	Item	Percentage	P.value
1.	Have you received any training on pressure ulcer prevention? Yes No	51 (51%) 49 (49%)	.055
2.	The main cause of pressure ulcer is? a) Poor Diet b) Lack of Mobility c) High Blood Pressure d) Regular exercise	14 (14%) 84 (84%) 1 (1%) 1 (1%)	.030
3.	The first sign of a pressure ulcer is?		

a)	Redness	91 (91%)	.111
b)	Open wound	5 (5%)	
c)	Swelling	1 (1%)	
d)	bullish Skin	3 (3%)	
4.	Most common area for pressure ulcer are?		
a)	Abdomen	2 (2%)	.154
b)	Elbows	8 (8%)	
c)	Heels and sacrum	88 (88%)	
d)	Chest	2 (2%)	
5.	A bed – ridden patient should be repositioned?		
a)	Once daily	5 (5%)	.057
b)	Every 2 hours	87 (87%)	
c)	Only when in pain	8 (8%)	
d)	Once weekly	0 (0%)	
6.	Which action is wrong for prevention?		
a)	Keeping skin clean and dry	28 (28%)	.058
b)	Using pillow under pressure point	9 (9%)	
c)	Massaging bony areas	60 (60%)	
d)	Checking skin regularly	3 (3%)	

Item no:1 Most of the participants who receive training on pressure ulcer prevention select option Yes (51%), and some participants select option No (49%). This study statistically not ($P = .055$).

Item no :2 The main cause of pressure ulcer is, most of the participants were select option lack of mobility (84%) ,than some participants select poor diet (14%), high blood pressure (1%),and regular exercise (1%). This study statistically significant ($P= .030$).

Item no : 3 majority of the participants were say the first sign of pressure ulcer is redness that does not go away on pressure (91%) , than some participants were select option open wound (5%) , black skin (1%) and swelling (3%). This study statistically not significant ($P=$

.111).

Item no: 4 Most common area for pressure ulcer are, majority of the participants were select option heels and sacrum (88%) and some of the participants choose option Abdomen (2%) , Elbows (8%), and chest (2%). This statistically not significant ($P=.154$).

Item no:5 A bed-ridden patient should be repositioned, the majority of the participants were select option Every 2 hours (87%) than some participants select option Once daily (5%) , only when in pain (8%), and once weekly (0%).This study statistically not significant ($P= .057$).

Item no: 6 Which action is wrong for prevention. In this study majority of participants were select option Massaging bony area (60%) and some participants were

select option keeping skin clean and dry (28%), using pillow under pressure point (9%) and Checking skin regularly (3%). This

study statistically not significant ($P = .058$).

Table no:7 Subject of qualification compare with knowledgeable question:

S.no	Item	Percentage	P.value
1.	Have you received any training on pressure ulcer prevention? Yes No	51 (51%) 49 (49%)	.082
2.	The main cause of pressure ulcer is? a) Poor Diet b) Lack of Mobility c) High Blood Pressure d) Regular exercise	14 (14%) 84 (84%) 1 (1%) 1 (1%)	.039
3.	The first sign of a pressure ulcer is? a) Redness b) Open wound c) Swelling d) bullish Skin	91 (91%) 5 (5%) 1 (1%) 3 (3%)	.655
4.	Most common area for pressure ulcer area? a) Abdomen b) Elbows c) Heels and sacrum d) Chest	2 (2%) 8 (8%) 88 (98%) 2 (2%)	.017
5.	A bed – ridden patient should be repositioned? a) Once daily b) Every 2 hours c) Only when in pain d) Once weekly	5 (5%) 87 (87%) 8 (8%) 0 (0%)	.811
6.	Which action is wrong for prevention? a) Keeping skin clean and dry b) Using pillow under pressure point	28 (28%) 9 (9%)	.366

c)	Massaging bony areas	60 (60%)	
d)	Checking skin regularly	3 (3%)	

Item no:1 Most of the participants who receive training on pressure ulcer prevention select option Yes (51%), and some participants select option No (49%). This study statistically not ($p = .082$).

Item no:2 The main cause of pressure ulcer is ,most of the participants were select option lack of mobility (84%) ,than some participants select poor diet (14%), high blood pressure (1%),and regular exercise (1%). This study statistically significant ($p = .039$).

Item no : 3 The majority of the participants were say the first sign of pressure ulcer is redness that does not go away on pressure (91%) , than some participants were select option open wound (5%) , black skin (1%) and swelling (3%). This study statistically not significant ($P=.655$).

Item no: 4 Most common area for pressure

ulcer are, majority of the participants were select option heels and sacrum (88%) and some of the participants choose option Abdomen (2%) , Elbows (8%), and chest (2%). This study statistically significant ($P=.017$).

Item no:5 A bed-ridden patient should be repositioned, the majority of the participants were select option Every 2 hours (87%) than some participants select option Once daily (5%) , only when in pain (8%), and once weekly (0%).This study statistically not significant ($P= .811$).

Item no: 6 Which action is wrong for prevention. In this study majority of participants were select option Massaging bony area (60%) and some participants were select option keeping skin clean and dry (28%), using pillow under pressure point (9%) and Checking skin regularly (3%). This study statistically not significant ($P= .366$).

Table no: 8 Subject of Distribution of total nursing experience compare with knowledgeable questions:

S.no	Item	Percentage	P.value
1.	Have you received any training on pressure ulcer prevention? Yes No	51 (51%) 49 (49%)	.008
2.	The main cause of pressure ulcer is? a) Poor Diet b) Lack of Mobility c) High Blood Pressure d) Regular exercise	14 (14%) 84 (84%) 1 (1%) 1 (1%)	.002
3.	The first sign of a pressure ulcer is? a) Redness b) Open wound c) Swelling d) bullish Skin	91 (91%) 5 (5%) 1 (1%) 3 (3%)	.369
4.	Most common area for pressure ulcer are? a) Abdomen	2 (2%)	

b)	Elbows	8 (8%)	.005
c)	Heels and sacrum	88 (88%)	
d)	Chest	2 (2%)	
5.	A bed – ridden patient should be repositioned?		
a)	Once daily	5 (5%)	.566
b)	Every 2 hours	87 (87%)	
c)	Only when in pain	8 (8%)	
d)	Once weekly	0 (0%)	
6.	Which action is wrong for prevention?		
a)	Keeping skin clean and dry	28 (28%)	.254
b)	Using pillow under pressure point	9 (9%)	
c)	Massaging bony areas	60 (60%)	
d)	Checking skin regularly	3 (3%)	

Item no:1 Most of the participants who receive training on pressure ulcer prevention select option Yes (51%), and some participants select option No (49%). This study statically significant ($p = .008$).

Item no : 2 The main cause of pressure ulcer is ,most of the participants were select option lack of mobility (84%) ,than some participants select poor diet (14%), high blood pressure (1%),and regular exercise (1%). This study statistically significant ($p = .002$).

Item no : 3 The majority of the participants were say the first sign of pressure ulcer is redness that does not go away on pressure (91%) , than some participants were select option open wound (5%) , black skin (1%) and swelling (3%). This study statistically significant ($P= .369$).

Item no: 4 Most common area for pressure ulcer are, majority of the participants were select option heels and sacrum (88%) and some of the participants choose option Abdomen (2%) , Elbows (8%), and chest (2%). This study statistically not significant ($P=.005$).

Item no:5 A bed-ridden patient should be repositioned, the majority of the participants were select option Every 2 hours (87%) than some participants select option Once daily (5%) , only when in pain (8%), and once weekly (0%). This study statistically not significant ($P= .566$).

Item no: 6 Which action is wrong for prevention. In this study majority of participants were select option Massaging bony area (60%) and some participants were select option keeping skin clean and dry (28%), using pillow under pressure point (9%) and Checking skin regularly (3%). This study statistically not significant ($P= .254$).

Table no: 9 Distribution of Total years ICU experience compare with knowledgeable questions:

S.No	Item	Percentage	P.value
1.	Have you received any training on pressure ulcer prevention?		
	Yes	51 (51%)	.000
	No	49 (49%)	
2.	The main cause of pressure ulcer is?		
a)	Poor Diet	14 (14%)	

b)	Lack of Mobility	84 (84%)	.003
c)	High Blood Pressure	1 (1%)	
d)	Regular exercise	1 (1%)	
3.	The first sign of a pressure ulcer is?		
a)	Redness	91 (91%)	.557
b)	Open wound	5 (5%)	
c)	Swelling	1 (1%)	
d)	bullish Skin	3 (3%)	
4.	Most common area for pressure ulcer are?		
a)	Abdomen	2 (2%)	
b)	Elbows	8 (8%)	.001
c)	Heels and sacrum	88 (88%)	
d)	Chest	2 (2%)	
5.	A bed – ridden patient should be repositioned?		
a)	Once daily	5 (5%)	
b)	Every 2 hours	87 (87%)	.446
c)	Only when in pain	8 (8%)	
d)	Once weekly	0 (0%)	
6.	Which action is wrong for prevention?		
a)	Keeping skin clean and dry	28 (28%)	
b)	Using pillow under pressure point	9 (9%)	.311
c)	Massaging bony areas	60 (60%)	
d)	Checking skin regularly	3 (3%)	

Item no:1 Most of the participants who receive training on pressure ulcer prevention select option Yes (51%), and some participants select option No (49%). This study statistically highly significant ($p = .000$).

Item no : 2 The main cause of pressure ulcer is ,most of the participants were select option lack of mobility (84%) ,than some participants select poor diet (14%), high blood pressure (1%),and regular exercise (1%). This study statistically significant ($p = .003$).

Item no : 3 The majority of the participants were say the first sign of pressure ulcer is redness

that does not go away on pressure (91%) , than some participants were select option open wound (5%) , black skin (1%) and swelling (3%). This study statistically not significant ($P= .557$).

Item no: 4 Most common area for pressure ulcer are, majority of the participants were select option heels and sacrum (88%) and some of the participants choose option Abdomen (2%) , Elbows (8%), and chest (2%). This study statistically significant ($P=.001$).

Item no:5 A bed-ridden patient should be repositioned, the majority of the participants were select option Every 2 hours (87%) than

some participants select option Once daily (5%), only when in pain (8%), and once weekly (0%). This study statistically not significant ($P=.446$).

Item no: 6 Which action is wrong for prevention. In this study majority of participants were select option Massaging bony area (60%) and some participants were select option keeping skin clean and dry (28%), using pillow under pressure point (9%) and Checking skin regularly (3%). This study statistically not significant ($P=.311$)

Discussion:

The current study relevant that the knowledge of nurses on pressure ulcer prevention in ICU. The majority of (77.0%) participants were aged 25 to 35 years, than (17.0%) participants were aged 36 to 45 years, (6.0%) participants were aged 45 years to above. Compared with cross sectional study of haque et-al (2014) in this study (53%) participants were aged 20 to 30, (47%) participants were aged 31 to 40. The majority of young age participants response in this study because young staff more actively involved patient care and activities, than senior participants work in supervisory role (23).

The current study reported that the majority of participants were male (60%). Compared with conducted study by Jefferson Garcia et-al (2023), in this study the majority of participants were female (56.88%). because in critical care unit more require physical tasks, like patient handling and repositioning, to frequently assign for male (1).

The current study reported that education level of participants was (25%) in diploma, (22%) of participants were BS Nursing, the majority of the participants were Post RN (49.0%), some participants were MSN or higher (4.0%). Compared this previous study Wafaa Hassan Ali et-al (2020), in this study majority of the participants qualification is Batchler (37.5), (30.0%) of participants were diploma, then (10.0%) Of participants were MSN (11)

The currents study reported that receive training on PU prevention, (51%) participants were

receiving training on PU prevention, then (49%) participants were not receiving any training about PU prevention. Which is Compared with study conducted by Abdalkarim Radwan et-al (2023), reported that the majority of the participants were (69.6%) not receive training pressure ulcer prevention, while (30.4%) participants were receive training on PU prevention (24).

The current study reported that total years nursing experience of participants, main (7.8) years, minimum (1.00) years, maximum (31.00) and S.D \pm (4.69). which is comparable with study conducted by Gulbanu Zencir et-al (2025), reported that total years of nursing experience were S.D \pm (6.55), this result higher S.D than current study (19).

The current study reported that the common area of pressure ulcer is, majority of the participants were (88%) sacrum and heels is the common area for pressure ulcer, while (2%) participants abdomen, (8%) elbows, and (2%) participants agreed chest is the common area for pressure ulcer, ($P=.022$) statistically significant. Which is comparable with conducted by E.Hahnel et-al (2020), in this study (11.0%) sacrum is the most common area for pressure ulcer, ($P=.001$) statistically significant (25).

The current study, the majority of participants were lack of mobility (84%) is the main cause of PU, than (14%) poor diet, high blood pressure (1%) and regular exercise (1%). Statistically not significant ($P=.096$). which is comparable with conducted study by Xerri et-al (2025) malnutrition is the main cause of PU (65.7%), while lack of oxygen (11.6%), moisture (21.9%) and don't know (8%) (26).

In my current study, A bed-redden patient should be repositioned, the majority of the participants were select option every 2 hours (87%), while once daily (5%), only when in pain (8%). Compared with conducted study by Edwin Daniel et-al (2023), in this study, A bed - reddened patient should be repositioned 15 minutes, the majority of the participants were (38.0%) some times change position (27).

The current study reported that wrong action for PU prevention, most of the participants were

(60.0%) massaging bony area is wrong action for PU prevention, while (28%) keeping skin clean and dry. Compared with conducted by Aiman et al (2023), massaging bony prominences promotes circulation and prevent pressure ulcer, (52.0%) participants were agreeing (28).

The current study reported that the majority of the nurses have good knowledge (60%), moderate knowledge (32%), and poor knowledge (8%). Compare with conducted study of Haque et al, (2014), in this study participants have poor knowledge (20%) less than 50%, and good knowledge were (20%) more than 80% (1).

Conclusion:

In this study revealed that the overall knowledge level of nurses was satisfactory. The majority of the participants (60%) demonstrated good knowledge level regarding pressure ulcer prevention, this study indicates that most of the nurses have adequate understanding and awareness related to pressure Ulcer prevention.

Recommendation: It is recommended that the regular practices and programs on pressure ulcer prevention for all ICU nurses. There is need to conduct the interventional study, to assess the practice, and behavior of Nurses.

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Conflict of Interest: No Any.

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