

A descriptive study on the knowledge and attitude of nurses toward the prevention of pressure ulcers in the intensive care unit

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ABSTRACT

Introduction: The study's objectives are to investigate the level of knowledge, attitude, and performance (KAP) of nurses on the prevention of pressure ulcers (PUs) prevention in the intensive care (ICU) and also to identify the relationship between nurses' KAP toward the implementation of preventive measures for PUs.

Materials and Methods: This cross-sectional study was conducted among 60 registered nurses in the ICU at Taiping Hospital. to assess the nurses' knowledge and attitude level using the Knowledge and Attitude on prevention of PUs questionnaire. A descriptive analysis and Pearson Correlation were used to analyze the data.

Result: From a total of 60 nurses 36 (60%) of nurses demonstrated a moderate level of KAP, and 17 (28%) demonstrated a high level of knowledge. They also exhibited neutral attitudes towards PUs prevention 49 (82%). The findings revealed a positive relationship between nurses' KAP toward implementing preventive measures on PUs ($p=0.04$; $r=0.3$). The findings show that nurses regularly performed the assessment of the risk factors of PUs for all hospitalized patients when performing PUs care. However, the plan for preventive nursing care was not properly reviewed.

Conclusion: This study suggested that appropriate guidelines, education programs, and an environment that makes it possible to provide continuing education should be created for nurses to prevent PUs in the ICU.

KEYWORDS:

Knowledge, attitude, Intensive Care Unit, critical care nurses

INTRODUCTION

A combination of physiologic occurrences and external conditions causes pressure ulcers (PUs). The causes of the development of PUs is because of the persistent and prolonged pressure on the skin and tissues surrounding it.

This causes the tissues to become ischemic, furthermore, impaired lymphatic drainage has also been demonstrated to be a factor in injury, in addition to localized ischemia and perfusion injury to tissues. Lymph fluid drainage is impeded

by compression, which increases interstitial fluid and waste buildup and promotes the development of PUs. It has been demonstrated that the deformation of tissues is a more accurate indicator of the development of PUs than the pressure applied to tissues alone.¹

The following describes PUs: Stage one, or the first stage of a PUs, is characterized by intact skin and localized redness. A partial loss of dermal thickness is a characteristic of PUs stage two. The complete loss of tissue thickness characterizes stage three PUs. Bone, tendon, or muscles may not be visible under the skin, but undermining or tunneling may be evident. Stage four PUs completely lose tissue thickness and exposed bone, tendon, or muscle. A patient with a PUs in stage four may experience excruciating discomfort. Stage four of PUs commonly involves undermining, tunneling, or both.²

Patients can suffer significant injury from PUs, which can slow rehabilitation, cause discomfort, and lead to deadly infections.³ According to specific reports, PUs can increase a hospital stay's length by a median of 4.31 days. Because of the adverse effects associated with PUs, ICU PUs prevention is essential.⁴ In Malaysia, the average length of stay in the intensive care Unit (ICU) was 4.7 days, with a median of 2.5 days. The incidence of PUs ranged from 0.5 to 21.1 per 1000 Intensive care units' days with a mean of 6.6.⁵ In both acute and long-term care, PUs is common.

However, critically ill patients are more likely to develop PUs due to a combination of factors.⁶ For many years, preventing PUs has been a concern for nurses. "If the patients developed of pressure ulcers, it is not because of the disease but reflected poor nursing care that they get," Florence Nightingale wrote in 1859.⁷

According to the 2014 World Stop Pressure Ulcer Day study, almost 700,000 patients are impacted by PUs yearly. Each year, approximately 20,000 patients in acute care acquire a new pressure ulcer.

According to this study, between January 2012 and December 2013, 4% and 6% of patients in acute care settings and more than 5 to 10% of patients in non-acute care experienced PUs. In Ethiopia, PUs are responsible for 2% of unnecessary fatalities.⁷ The chance of developing blisters in intensive care unit patients is high, and pus can substantially lengthen a

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patient's stay in the ICU. Patients with pressure ulcers are much more likely to suffer from morbidity, death, and financial difficulty. Patients admitted to the intensive care, on the first day of their stay. Very sick patients may require prolonged bed rest, mechanical ventilation, and sedation. These people are susceptible to PUs because of prolonged pressure on areas with bony prominences.¹

Malaysian researchers from the critical care unit analyzed ventilator-associated pneumonia, catheter-related bloodstream infection, and postoperative complications (PUs) to assess nurses' perceptions of evidence-based recommendations to reduce complications.⁸ The suggestions of the pressure ulcer best practice guideline are incorporated into daily nursing patient care. The validated pressure ulcer risk assessment and intervention checklist need to be adopted in order to reduce the prevalence of hospital-acquired PUs and to enhance high levels of nurse compliance. Implementing prevention techniques and applying the risk assessment tool should be improved further.^{9,10}

MATERIALS AND METHODS

This study involved 60 registered nurses in Taiping Hospital's intensive care unit (ICU). This study was conducted using a cross-sectional design to assess the nurses' knowledge and attitude level using the Knowledge and Attitude on Prevention of pressure ulcer questionnaire. A descriptive analysis and Pearson Correlation were used to analyze the data.

Setting

This research study was conducted in the Taiping Hospital's general adult Intensive Care Unit (ICU) in Malaysia's northern province of Perak. The Intensive Care Unit is the most important in Hospital Taiping. The ICU is organized into two buildings and units and contains 20 beds. Both ICUs, however, are general ICUs, with a different specialist and nursing manager in charge of each.

Population

The target population was registered nurses working in General Intensive Care Unit. The nurses in the intensive care unit are responsible for all aspects of patient care, with a ratio of one nurse per mechanically ventilated patient and one nurse per two patients for all other patients. Approximately around 60% of Intensive Care Unit nurses are post-basic critical care holders were included in this study. Excluded criteria of nurses in this study are, refusing to participate and being more than 50 years old. A total of 60 nurses from ICU Hospital Taiping participated in this study. The whole investigation lasted about four months.

Section 1: Demographic Questionnaire:

Age, gender, marital status, primary education, formal training on PUs, post-basic, and length of services were among the seven elements on this questionnaire based on demographic data.

Section 2: Nurses' Knowledge of pressure ulcer prevention questionnaire:

It has been used to test theoretical information about all components of the pressure ulcer skincare bundle protocol to

the test. PUs development factors, skincare, nutrition maintaining good skin, dealing with mechanical strain, and pre-discharge instructions are among the six topics included. The correct answer received a score of "1," while the incorrect answer received a score of "0."

Section 3: Nurses' Attitude of Pressure Ulcer Prevention Questionnaire:

It consisted of 25 items structured questionnaire with attitude components. It was related to pressure ulcer development. The subject was asked to answer 5 levels of attitude ranging from 1 to 5: 5 = strongly agree, 4 = agree, 3 = neither agree, 2 = disagree and 1 = strongly disagree.

Ethical Approval

The approval was obtained from the Ethics Committee of Universiti Teknologi MARA (UiTM); the reference number is RMI (5/1/6). REC/ 110/15. This research was registered under National Medical Research Register (NMRR), reference number is NMRR-16-1106-30167, through Clinical Research Centre (CRC). Then, a permission letter to the director of Taiping Hospital was given.

RESULTS

Each page was personally scored after the data collection was completed. For calculation, the background data sheet was coded and listed in numbers. Calculations were done by hand. The following significance tests were used: Percentage, frequency, correlation, coefficient, and t-test are all examples of statistics.

Demographic Data of Nurses

The majority of nurses (46.7 %) were between the ages of 21 and 30, as shown in Table 1. The majority of them were females (91.7%). Although they all had a nursing diploma, only ten (16.7%) had completed an ICU Nursing Post-Basic course. The Taiping Intensive Care Hospital has the highest percentage of nurses with one to ten years of experience (71.7%). Only 3.3 percent of respondents had more than 21 years of work experience, compared to 11.7% who already had 11 to 20 years. Most had been trained in pressure ulcer prevention (85%).

Nurses' Knowledge Regarding the Prevention of Pressure Ulcer

This data on the prevention of PUs is in nurses' knowledge. Overall, the nurses' knowledge of PUs prevention was moderate (60%). Table II indicates the quantity and frequency of nurses' knowledge levels; none scored below 50%. Nurses' low awareness of PUs prevention ranges from 60 to 69.99 % (7%). Few nurses had a high knowledge score of 80-89.99 % (28 %) in preventing PUs. With scores ranging from 90 to 100 %, 3 nurses (5%) had excellent knowledge, showing a high level of PUs prevention awareness among nurses. The percentage distribution of study group participants corresponded to knowledge level throughout the investigation. According to the result, all ICU nurses have a good level of expertise on how to prevent PUs. More than half of them have advanced expertise. According to the data, more than 40% had a good comprehension (90%) of preventing PUs. In Table II, throughout the study, the percentage distribution of the study group respondents is connected to knowledge level. The nurses' knowledge of PUs

Table I: Frequency and Percentage of Nurses in Demographic Data (N=60)

Characteristics	Frequency (N = 60)	%
Age		
21 – 30	28	46.7
31 – 40	22	36.7
41 – 50	10	16.6
Gender		
Female	55	91.7
Male	5	8.3
Educational status		
Diploma in Nursing	50	83.3
Post Basic	10	16.7
Services experiences (years)		
Less than 1 year	5	8.3
1 – 5	23	38.3
6 – 10	20	33.4
11 – 15	3	5
16 – 20	7	11.7
21 and above	2	3.3
Formal training for pressure ulcer		
Yes	51	85
No	9	15

Table II: Frequency and percentage of nurses' knowledge levels (N=60)

	n	%
Very Low (<60%)	0	0
Low (60-69.99%)	4	7
Moderate (70-79.99%)	36	60
High (80-89.99%)	17	28
Very High (90-100%)	3	5

Table III: Mean Percentage, Standard Deviation, and Level of Nurses' Knowledge in Prevention of Pressure Ulcer

	M (%)	SD	Level
Factors pressure ulcer formation	73.3	0.96	Neutral
Risk assessment	73.3	0.67	Neutral
Skin Care	89.7	1.13	Neutral
Nutrition to maintain Healthy skin	86.3	0.57	Neutral
Management of Mechanical loads	73.3	0.80	Neutral
Educational program	93.3	0.62	Neutral

Table IV: The correlation coefficient Correlations

		SCORE_ ATTITUDE	SCORE_ KNOWLEDGE
SCORE_PRE	Pearson Correlation	1	.364*
	Sig. (2-tailed)		.048
	N	30	30
SCORE_POST	Pearson Correlation	0.364*	1
	Sig. (2-tailed)	0.048	
	N	60	60

*. Correlation is significant at the 0.05 level (2-tailed).

prevention was displayed in this table. It has been documented that all ICU nurses have a high understanding of how to prevent PUs.

Nurses' Attitude Regarding Pressure Ulcer Prevention

Table III assesses the dimension of the attitudes regarding preventing PUs among ICU nurses. The results showed all

dimensions of the attitudes were at neutral levels. Mean Percentage, Standard Deviation, and Level of Nurses' Attitude Regarding Pressure Ulcer Prevention (n=60) assessed each dimension of the attitudes regarding PUs prevention. The results showed nurses had neutral levels in skin care, nutrition to maintain healthy skin, and management of mechanical loads.

Relationship between Nurses' Knowledge and Attitude Regarding Pressure Ulcer Prevention

Correlation: The correlation coefficient r , measures the strength and direction of a linear relationship between variables. The value of r is always between +1 and -1. Suppose the value of r is closest to -1. In that case, it shows that the variable has a negative linear relationship, whereas when it is closest to +1 showed that the variable has a positive linear relationship.

The correlations table above shows a significant relationship between these two tests (sig. $0.048 < 0.05$) with a correlation coefficient of 0.364. The strength between these two tests can be concluded as a weak positive relationship since the coefficient correlation is less than 0.5.

DISCUSSION

The development of PUs is a significant issue for patients and the nurses caring for them. Patients, families, and the healthcare system are all affected by PUs, which cause discomfort, increase suffering, and cost money. They prolong the hospital stay and predispose patients to subsequent infection, sepsis, and recurrent surgery.¹¹ Although many studies have been conducted internationally to measure the KAP in preventing PUs, nearly none have been conducted nationwide. According to the findings of this study, nurses exhibited a modest degree of knowledge and a neutral to favourable attitude toward PUs prevention. The results were discussed in parts: nurses' knowledge and attitudes level in PUs prevention.

Regarding Socio-Demographic Characteristics of Nurses

The findings of this research reveal that most nurses (46.7%) are under the age of 30. This finding could be because practically all the nurses are recent college graduates who work together in ICU. Meanwhile, the percentage of nurses between the ages of 31 and 40 is less than 40%. In contrast, Li Hu¹² reported that most nurses were between the ages of 21 till 30 when he researched Intensive Care Nurses' KAP (pressure injury prevention in China: A Cross-Sectional Study) (54.9 %).

Nurses' Knowledge Regarding the Prevention of PUs

The findings related to nurses' knowledge in preventing PUs had a moderate to high level of knowledge. There are possible reasons for moderate to high-level knowledge. More than 80% of nurses in the ICU had formal training in PUs. In comparison with the study by Taha,¹³ most nurses who participated in the survey had unsatisfactory knowledge levels regarding pressure ulcer management. A study done by Halász B.G¹⁴ also found that nurses had insufficient knowledge (45.5%) overall regarding the prevention of PUs. These findings show that nurses in the UiTM hospital had moderate to high levels of knowledge regarding preventing PUs.

The quality of formal education and training experience among ICU nurses could be a factor in their moderate to high levels of knowledge. However, two of the six elements of nurses' knowledge about pressure ulcer prevention, causes for

PUs, and action to reduce friction, had poor levels, resulting in low-pressure ulcer prevention results. This study, supported by study Ebi¹⁵, reported low knowledge regarding the identification, prevention, and management of PUs before program implementation and explained this result as a result of nurses' lack of scientific preparation. It concluded that almost all ICU nurses must develop and maintain their knowledge and skills about critical patients in identifying, preventing, and managing PUs. Our study showed that a nurse's knowledge of pressure ulcer prevention is adequate both before and after the adoption of pressure ulcer prevention.

Nurses' Attitude Regarding Pressure Ulcer Prevention

Most nurses in our study had an overall neutral attitude toward PUs prevention, which is significantly lower than a survey conducted in Sweden, where nursing staff had a positive attitude toward pressure ulcer prevention. According to study¹⁴, participants had a good attitude because they scored higher than 65% regarding the prevention and treatment of PUs for the 5 factors. Although they might not realize it, participants demonstrated a positive attitude toward preventing and treating PUs because they scored higher than 65% for the five variables. The natural attitude of nurses in all aspects of skincare, diet to preserve good skin, and mechanical load control.

Relationship between Nurses' Knowledge and Attitude Regarding Pressure Ulcer Prevention

The result reveals the relationship is not significant between these two variables that is knowledge and attitude regarding PUs prevention. Based on the KAP model, one factor affecting attitudes is a specific area of a knowledge base. Contrary to this finding, it does not support the KAP model. On the other hand, the nurses' attitudes were influenced by their concern, purpose, awareness, or traditional values learned from nursing teachers or senior nurses.¹⁵ This was when they worked for an extended period when their attitudes were not significant with knowledge. Therefore, knowledge is not related to nurses' development of attitudes. This study supported the model when there was no relationship between knowledge and attitude. Future research should explore the nurse's awareness, purpose, or traditional values concerning PUs prevention. The small sample size of this study could be one of the factors for the lack of a link between nurses' knowledge and attitude.

CONCLUSION

Preventing PUs complications in the ICU is a critical issue that faces healthcare providers, particularly nursing staff. Nurses' ability to cope with the problem of preventing PUs. Factors affecting health outcomes are influenced by a complex interplay of system, provider, and patient difficulties. As a result, these elements must be considered when implementing clinical practice improvement interventions such as risk assessment, nurses' attitudes, practices, and knowledge. Although thorough descriptions of these elements exist in the Western world, there is little knowledge about organizational culture available in settings in ICUs in Malaysian to aid planning.

To prevent PUs, healthcare management should identify perceived impediments to care and eliminate them as much as possible to prevent PUs, and healthcare management should identify perceived barriers to care and eliminate them as much as possible. PUs prevention in-service training and refresher courses should be continued, with refresher

sessions lasting at least six months. Nurses should receive further training to improve their understanding of PUs prevention techniques. To improve nursing practice in this area, nurses must increase their KAP of PUs prevention.

This study should be repeated in different environments, such as the general ward, to ensure that the findings above are generalisable. Results from this study should be shared with hospital administrators, researchers, physicians, nurse administrators, and the general public.

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CONFLICT OF INTEREST

There is no actual or potential conflict of interest in this article.

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