ORIGINAL ARTICLE

Nurses Perceived Barriers toward Pressure Ulcer Prevention in Critical Care Units in Jordan

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ABSTRACT

Background: Pressure ulcer is a common problem in critical care units. Prevention programs and pressure ulcer assessment methods are deemed to be important aspects of daily nursing care. However, the ability of nurses to perform routine pressure ulcer assessment and provide preventative care for their patients could be affected by any barriers which may exist within their care settings. So far, however, any such barriers, as perceived by Jordanian nurses, have not been well established.
Aim: To investigate barriers toward pressure ulcer prevention as perceived by Jordanian nurses who work in critical care units.
Methods: A cross-sectional study was carried out in two hospitals in the north of Jordan. 103 critical care nurses working at these sites completed a self-administered questionnaire, with a response rate of 55%.
Results: Several barriers perceived to affect patients' quality of care regarding proper prevention of pressure ulcers were identified by Jordanian critical care units' nurses who. These included lack of staff (89.2%), lack of sufficient time (85.3%), and having an uncooperative or severely ill patient (70%). Nurses who had more experience and those who had undertaken previous training about pressure ulcer prevention perceived fewer barriers than their less experienced or less educated counterparts.
Conclusion: The findings of this study suggest several barriers need to be resolved if proper prevention of pressure ulcers is to be guaranteed in critical care units. The study could help nursing leaders to understand the barriers perceived by critical care nurses, and encourage them to clarify these barriers and work to eliminate them.
Keywords: Critical care, barriers, pressure ulcer, prevention, Jordan.

INTRODUCTION

Critically ill patients are at higher risk of developing pressure ulcers (PU), which may in turn increase their likelihood of a lengthier intensive care unit (ICU) stay and put them at higher risk of mortality[1,2]. Prevention of PUs in ICU is significant because of the high incidence rates of this condition, which have been reported to range from 1 to 56%[1]..

As prevention is an important feature of the care of ICU patients, Tayyib et al. (2016b) proposed several preventive strategies to improve the quality of care for these patients and decrease their risk of PU development However, the same authors highlighted the existence of a gap between how these strategies were intended be applied in theory, and actual nursing practice[2]. Pressure ulcers remain a growing concern in clinical practice, and are thought to have a serious negative impact on patients and on healthcare systems[3].

Due to the high risk of PU to ICU patients and the adverse effect of its occurrence on patients' health, as well as the cost to the health care system, prevention is given particular significance by clinicians. It is believed that PU Prevention (PUP) is the responsibility of all health care professionals[4,5] but nurses in particular have the chance to directly play a key role[6].

Patients admitted to ICUs are recognized as being in need of extra care in relation to the risk of health complications such as PUs. Basic preventive care in this setting involves carrying out daily skin assessments, relieving pressure and preventing malnutrition[7].

Many factors which may influence nurses' ability to perform PUP have been discussed in previous literature[2,8]. Of these, the nurses' attitude toward prevention protocols in their different clinical areas. Mostly, more positive attitudes have been found to reflect positively on nurses' adoption and practice of pressure ulcer prevention techniques. However, they are not proven to be directly related to decreased PU incidence risk[8].

The amount of knowledge that nurses possess could also affect the actual practice of PUP. Receiving training courses on PU categorization and appropriate prevention, in addition to clinical experience, all have the potential to positively

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enhance direct care to patients regarding PU preventive measures[2].

However, even in cases were nurses have both a positive attitude and good knowledge of PU and its prevention, many obstacles have been reported that affect their ability to apply preventive measures. Of these, lack of time, shortage of staff, and lack of suitable resources have been identified[1,9,10].

In fact, a limited number of studies have focused on the barriers to PUP that nurses in ICUs believe to exist[1,11,12]. However, several studies have discussed barriers toward PUP generally, for nurses working in a range of health settings[5,6,13,14,15].

In one recent study conducted in Iran[12], 88 nurses working in the trauma ICUs of one hospital were recruited conveniently. The barriers most frequently reported by these nurses were staff shortages and heavy workload. On the other hand, having an uncooperative patient was seemingly the least important barrier in the ICU. According to this study, more experienced nurses and those who had not previously taken part in any educational programs about PU prevention, perceived there to be more barriers than their counterparts who were still relatively inexperienced, or those who had received previous PUP training.

One further study has examined ICU nurses' perceived barriers towards PUP[11.] For this, fifty-six registered nurses working in the ICU of one hospital were recruited. Insufficient time, lack of knowledge regarding PU, and unease with completing the required documentation format were reported as the most significant barriers toward PUP implementation in this setting. On the other hand, the availability of preventive equipment and skin care products, and having a cooperative health care team were considered to be the greatest facilitators.

In a further similar study, nurses working in four ICUs in one Swedish hospital completed 146 questionnaires[1]. In agreement with previous research, a lack of time was the most significant barrier (58%), followed by the nurses' perceived priorities when looking after severely ill patients (29%). Conversely, having knowledgeable nurses and access to PUP equipment were suggested as the most important facilitators of improved PUP care.

In general, full wards and a lack of access to suitable literature regarding PUP were identified as of the difficulties that affect nurses' ability to adhere to correct PUP protocol[14]. On the other hand, uncooperative patients have been reported as one barrier to the successful implementation of a strict PU risk assessment program[6]. Lack of time and resources have also been reported as obstacles which impede application of appropriate PUP techniques[2,15].

In one study[2], eleven registered nurses from one ICU enrolled in a special program which promoted a collection of preventive interventions for PUs, including frequent assessment of skin, timely positioning of patients (every 3 hours), assessment of nutritional status, and the use of air mattresses for all ICU patients. Though the nurses' compliance with this bundle of actions was high (78%), the greater the amount of time nurses were required to spend with a patient, the less likely they were to comply with the recommended PUP measures. ($F(3, 8) = 6.35$, $p < 0.016$).

A pilot descriptive study of 66 perioperative nurses recruited from 11 acute care hospitals also highlights the significant effect of lack of knowledge on nurses' participation in PUP[13]. The nurses were reported to believe in the importance of PUP; however, their lack of sufficient knowledge regarding these measures adversely affected their adoption of appropriate practice. The authors of this study strongly recommend educational programs on PUP to help nurses to improve their knowledge.

In Jordan, there is a limited amount of existing literature which focuses on the barriers nurses believe exist toward PU preventive measures[8,10.]. However, this study is the first of its kind in Jordan which focuses on barriers as perceived by nurses who work in ICUs specifically, as these units are known internationally to have the highest risk of PU occurrence.

In Tubaishat et al[8], a multicenter study of 428 nurses, a lack of working staff (89% of nurses) and a shortage of time (85%) were reported as the main factors preventing the successful application of PUP. Less commonly (68%), the severity of the patient's condition was stated.

=Another cross sectional study[10] consulted 194 nurses from 8 Jordanian hospitals. Despite a smaller sample size compared to Tubaishat et al. (2013), there was agreement that a shortage of time and nursing staff are the most significant factors affecting nurses' adherence to PU assessment and prevention protocols.

The aim of this study was to explore the barriers toward PUP intervention as perceived by Jordanian nurses working in ICUs.

METHODOLOGY

A descriptive, cross-sectional study was conducted in one governmental and one university-affiliated hospital in Jordan, which were selected for reasons of convenience. Nurses working in the two hospitals participated if they were in full-time positions and

involved in providing direct care to patients, including PU patients. Administrator nurses were excluded from the study on the grounds that they do not provide direct care to patients.

Instrument: The data collection tool was adapted from the literature (6, 14). The tool included two sections: a demographical data section, and a "barriers towards PUP" section. The latter consisted of ten items, which were considered to potentially prevent nurses from providing adequate PUP measures to patients at risk of PU. The nurses responded in this part according to a likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Procedure: The principal investigator visited the research site and, after ethical approval was secured, the questionnaire was distributed to the nurses, who were asked to complete it. Each nurse was given adequate time to complete the questionnaire, since they were collected by the investigator at the end of the nurse's shift. Necessary information about the study's purposes and procedures was given to the nurses on the cover page of the questionnaire.

Ethical considerations: The study was approved by the participating hospitals. Nurses' names were not sought and were replaced with ID numbers. Participants were assured that they could withdraw from the study at any time without penalty and that they had the full right to refuse to participate.

Data analysis: SPSS version 21 was used to analyze the data. Descriptive data was used to describe the sample and to summarize the percentages of nurses who recognized the existence of particular barriers. A total score for the barriers was calculated, which ranged from 5 to 50. The impact of certain demographics on the total barrier score was accomplished using the appropriate tests, like the t-test and ANOVA. A *P* value of less than 0.05 was considered significant.

RESULTS

Sample description: A total of 187 nurses working in the critical care units of the two participating hospitals were targeted. However, only 103 questionnaires were returned and entered into SPSS. This gave a response rate of 55%.

Nurses who participated in the study were mainly females 62(60.8%), with a mean age of 29.4 (SD=5.51) years. The age range was from 23-46 years old. Most of the participants were registered nurses 85(82.5%) with 80 of them having a bachelor degree and the remaining 5 holding a postgraduate degree. Around three-quarters of the nurses were working in the university hospital 66(64.1%), with experience in nursing ranging from 1 to 24 years, with a mean of 6.5 (SD=5.30) years. Almost half of the sample 50(48.5%) had never undertaken PUP training.

Barriers towards PUP: The barriers towards PUP as perceived by the ICU nurses are given in Table 2. The most frequently reported barrier was staff shortage (89.2%), closely followed by lack of time (85.3%). Insufficient knowledge about PUP and unstable patients were likewise reported as major barriers to nurses' application of preventive measures (70.3%). On the other hand, the least commonly reported barrier was absence of law suits for medical negligence in Jordan (47.6%). Since it is rare for a law suit to be opened in the courts in relation to PU occurrence, the knowledge of the lack of consequences may explain nurses' failure to comply fully with correct preventive practice.

The impact of demographics on the perception of barriers was tested using appropriate inferential tests. The t-test results showed that there was a significant difference between those who had received training on PUP and those who had not ($t(93)=0.028$, $p=0.04$) (Table 3). Nurses who had taken part in PUP training felt that there were fewer barriers (total score 27.1, SD=5.23) compared to those who had not been educated in this way (total score 36.2, SD=6.12). Furthermore, the results of the One-Way ANOVA test showed that there was a significant difference between varying levels of nursing experience ($F(2, 89)=1.216$, $p=0.03$) Table 3. Nurses with more than 10 years' experience perceived fewer barriers (28.5 (SD=5.91)) than those who had between 6 and 10 years (36.5 (SD=5.77)) and those who had between 1 and 5 years' experience (33.6 (SD=6.50)

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Table 1: Sample description

Characteristic	**N (%)**
Age M(SD)	29.4 (5.51) (Range 23-46)
Nursing experiences M(SD)	6.5 (5.30) (Range 1-24)
Gender	
Male	41 (39.2%)
Female	62 (60.8%)
Qualification	

Diploma	18 (17.5%)
Bachelor degree	80 (77.7%)
Postgraduate degree	5 (4.9%)
Type of hospital	
University hospital	66 (64.1%)
Public hospital	37 (35.9%)
Type of Nurse	
LPN	18 (17.5%)
RN	85 (82.5%)
Received previous education about PU prevention	
Yes	53 (51.5%)
No	50 (48.5%)

Table 2: Barriers towards PU prevention

Barriers component	**Rating scale (n and %)**				
	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
Staff shortage	1 (1.0)	7 (6.7)	3 (2.9)	44 (43.1)	47 (46.1)
Lack of knowledge about PU prevention	3 (3.0)	18 (17.8)	9 (8.9)	46 (45.5)	25 (24.8)
Lack of equipment	8 (8.1)	17 (17.2)	7 (7.1)	41 (41.4)	26 (26.3)
Lack of co-operation with other healthcare Professionals	1 (1.0)	32 (31.4)	12 (11.8)	41 (40.2)	16 (15.7)
Insufficient time	3 (2.9)	8 (7.8)	4 (3.9)	52 (51.0)	35 (34.3)
Lack of policies and guidelines about PU prevention	7 (6.9)	20 (19.6)	19 (18.6)	37 (36.3)	19 (18.6)
Feeling of no job satisfaction	8 (7.8)	20 (19.6)	10 (9.8)	43 (42.2)	21 (20.6)
Research findings are not user-friendly	4 (4.0)	20 (19.8)	17 (16.8)	44 (43.6)	16 (15.8)
Absence of law suits for medical errors	6 (5.9)	30 (29.7)	17 (16.8)	33 (32.7)	15 (14.9)
Un-cooperative or unstable patient	2 (2.0)	13 (12.9)	15 (14.9)	56 (55.4)	15 (14.9)

Table 3: Demographics and perceived barriers

Characteristic	**N (%)**	**Total Barriers Score(SD)**	**Statistics (t/F)**	**significance level**
Age			0.084	0.89
20-30 years	62 (64.6)	36.5 (5.77)		
31-40 years	26 (27.1)	36.6 (6.50)		
+41	8 (8.3)	35.6 (5.91)		
Gender			0.515	0.94
Male	39 (41.0)	36.4 (5.70)		
Female	55 (58.0)	36.3 (5.76)		
Type of hospital			0.205	0.84
University	60 (63.2)	36.6 (6.09)		
Government	35 (34.8)	36.3 (5.18)		
Type of nurses			-0.095	0.92
LPN	17 (18.3)	36.4 (4.88)		
RN	78 (81.7)	36.5 (5.94)		
Qualification			0.883	0.42
Diploma	17 (17.9)	36.3 (4.85)		
Bachelor Degree	73 (76.8)	36.7 (5.95)		
Postgraduate degree	5 (5.3)	33.2 (5.45)		
Nursing experience			1.216	0.03*
1-5 years	59 (66.2)	36.5 (5.77)		
6-10 years	23 (27.1)	33.6 (6.50)		
+ 11 years	7 (8.2)	28.5 (5.91)		
Received education about PU prevention			0.028	0.04*
Yes	53 (51.5)	27.1 (5.23)		
No	50 (48.5)	36.2 (6.12)		

cant at p<0.05

DISCUSSION

There is agreement that ICU patients are at high risk of developing PUs. New preventive measures are constantly emerging and educational programs for nurses to learn how to prevent PU are increasingly common. However, according to previous literature, PUs are still a problem for inpatients in a variety of hospital wards, including ICUs.

Previous literature has reported several factors that play a significant role in the extent to which nurses successfully implement measures to prevent PU. These have been referred to as perceived barriers. According to the nurses in our study, a lack of nurses employed in ICUs is the most significant barrier. A shortage of nurses could prevent them from implementing appropriate PU prevention measures to their patients. This is consistent with almost all previous studies on this subject[1,11,12].

This factor appears to be strongly related to another major perceived barrier, which is the lack of time available for nurses to carry out PUP work. Although having uncooperative patients and a lack of knowledge about PUP were identified separately as barriers in this study, it is thought that, when dealing with critically ill or uncooperative patients, such a shortage of time could affect PUP care, even if nurses have sufficient knowledge about it[2,6]. In another study, having uncooperative patients was reported as the least important barrier for ICU nurses[12].

The majority of nurses (70%) in the current study highlighted 'lack of knowledge' as a significant barrier to ICU nurses applying PUP measures. In a study by Strand and Lindgren[1] 38% of the ICU trauma nurses believed that raising nurses knowledge of PUP and having the required equipment would positively impact on nurses execution of prevention measures. Lack of knowledge was also identified as a barrier for PUP in ICUs in one Saudi hospital[11].

According to the current work, there was a significant relationship between nurses' experience and how they perceived barriers to PUP. The most experienced nurses identified fewer barriers to PUP application (P= 0.03). Nurses with experience of more than 10 years encountered fewer barriers than their counterparts with less experience. However, this finding is at odds with Mirshekari et al[12] who found that nurses with more experience in fact perceived more barriers to PUP than nurses who were less experienced.

One explanation for the current finding could be related to the fact that nurses with more experience may be more proficient in assessing patients and better at dealing with those who are at risk of PU development. One study in Jordan, however, suggested that there is a lack of evidence of a clear relationship between nurses' years of experience and the amount of knowledge they possess regarding Pus[10]. The sample surveyed in this study was nurses in general wards and not in ICUs specifically, however.

Nurses' previous participation in training courses about PUP was also established as significantly related to a lower number of perceived barriers towards this practice in ICUs (P= 0.04). This finding was supported by a similar study of 88 ICU nurses in one hospital in Iran[12]. The courses may benefit nurses by improving their competence in being able to correctly identify patients at high risk of PU development, and enhancing their understanding of what they should do to prevent its occurrence.

The least important barrier according to the Jordanian ICU nurses consulted in this study was the lack of fair medical errors law, which could accuse the nurses if ignoring the proper implementation of PUP program, and hence not Interrogated the occurrence of PUs in ICU' patients by law. Though may be make nonsense, it's almost a usual thing to notice the development of PU in ICU patients. This barrier had not previously been addressed in similar literature.

Although this study could be said to have limitations based on its reliance on self-administered questionnaires, this is also the method used in all similar studies previously published. Moreover, though the small sample selected only from the north of Jordan may unintentionally threaten its external validity and generalisability to all ICUs in Jordanian hospitals, the present study's sample is in fact the same size or larger than those of studies conducted in countries with similar populations.

CONCLUSION

In the current study, a number of perceived barriers affecting the ability of ICU nurses to adopt PUP measures were recorded. Of these; the most frequently reported were lack of staff and time, in addition to the unstable condition of patients and a lack of sufficient knowledge regarding PUs. These findings could encourage health care policy makers to provide more training for nurses working in ICUs on how to deal with PUs and how to prevent their occurrence. The fact that it seems that there is an actual shortage of nurses working in Jordanian ICUs,

and hence an increased workload in these settings, is also highlighted. In view of this, nurses are generally unable to spend a sufficient amount of time on applying PU prevention measures. Finally, more studies about PUP in Jordanian hospitals are required to enhance the quality of care for patients.

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