Exploring Nurses' Knowledge and Perceived Barriers to Carry Out Pressure Ulcer Prevention and Treatment, Documentation, and Risk Assessment

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Abstract

Aims: *The aims of the study were to determine: (1) Jordanian nurses' level of knowledge of pressure ulcer (PU) prevention and treatment of hospitalized patients (2) Perceived barriers to carry out pressure ulcer prevention and treatment, documentation, and risk assessment.*

Background*: Pressure ulcers are common and previous studies have shown education, knowledge and attitude affect implementation of interventions.*

Methods*: A self-reported cross-sectional survey design was used to collect data from nurses who were providing care to patients with pressure ulcer problems between June 2012 and November 2012. We used a questionnaire, which was informed by earlier work and guidelines, to collect data about nurses' knowledge of pressure ulcer prevention and treatment and to assess perceived barriers to carry out PU care.*

Results/Findings*: Knowledge showed no association with most demographic variables. Lack of staff, lack of time and unavailability of clinical PU guidelines were perceived barriers to carry out PU care effectively.*

Conclusion*: Jordanian nurses' knowledge on PU prevention and treatment was inadequate. Further, adequate dissemination of PU prevention and treatment guidelines seems to be a prerequisite to improve quality of PU prevention and treatment. Improving practice requires a multi-faceted approach to assure adequate support to make changes reflected on patients' outcomes and raising awareness of pressure ulcer preventive and treatment interventions using a variety of approaches (education, use of risk assessment tools, grading scores and clinical guidelines) are probably all useful.*

Keywords: Pressure ulcers; Knowledge, perceived barriers; pressure ulcer prevention and treatment; Jordan; Nursing

Background

Pressure ulcers (PUs) remain a significant and complex health problem in hospitals and community health care settings in terms of human suffering, pain, disfigurement, loss of productive time, and financial burden. Pressure ulcer consequences include significant costs (Day et al, 1997; Bennett et al, 2004; Brooks et al, 1997; Clough, 1994), increased infection rates (Anthony et al, 2004; Ash et al, 2002). Pressure ulcers are largely preventable (Day et al, 1997; EPUAP & NPUAP, 2009).

Numerous clinical guidelines have been developed and implemented in health care systems during the past twenty five years to assist nurses to take appropriate decisions to improve pressure ulcer prevention and management (Clark, 1999). The first guideline was developed in the Netherlands in 1985. Four years later, the National Pressure Ulcer Advisory Panel (NPUAP) in the USA developed new guidelines followed by the Agency for Health Care Policy and Research (AHCPR) guidelines in1992, the European Pressure Ulcer Advisory Panel (EPUAP) in 1998 and the National Institute for Clinical Excellence in 2003. In 2009 NPUAP and EPUAP published a joint guideline (EPUAP & NPUAP, 2009) and in 2012 a Pan Pacific guideline was published (Australian Wound Management Association, 2012). No published work has confirmed the use of any of these guidelines in the Arab World.

Pressure ulcer prevention programs consist of different components such as risk assessment, PU documentation, training and education, repositioning, use of preventive measures and support surfaces, and skin assessment. Day et al. (1997) suggest that aggressive, ongoing pressure ulcer prevention programs, including thorough skin assessment and care, frequent repositioning and careful selection of support surfaces have demonstrated significant reduction of pressure ulcer incidence and time taken for treatment as well as dramatic cost savings. Pressure ulcer training and education is a fundamental component of pressure ulcer programs which promote awareness of pressure ulcer prevention and best practice (Day et al, 1997; Banks, 1998; Bostrom et al, 1992).
Several studies have been conducted to evaluate how nurses employ pressure ulcer prevention and treatment methods. In a Dutch setting Halfens and Eggink (1995) found inappropriate treatments such as massage were in use. Panagiotopoulou and Kerr (2002) found specific practices that are now known to be poor practice such as use of “donuts” and massage were still thought to be acceptable in Greek setting. Apparently, there is a gap between theory and practice, with research results not finding their way into clinical practice.

Pancorbo-Hidalgo et al (2007) found high levels of knowledge in a Spanish location and about two thirds implemented prevention interventions and a similar figure for treatment interventions. They found nurses with a university degree, specific education in pressure ulcers or who had been involved in pressure ulcer research had better knowledge and higher implementation rates. Mockridge and Anthony (1999), in an English site, found senior staff were more knowledgeable than junior staff about pressure ulcer treatment. In a Belgian setting, Beeckman et al (2011) found inadequate knowledge of prevention of pressure ulcer, and while knowledge was not correlated with application of preventive measures – attitude was.

Figures from Jordan showed that pressure ulcers are a significant health problem among hospitalized patients, with a prevalence of 12%, or 7% when grade I was excluded (Tubaishat et al., 2010). Furthermore, nursing care in relation to pressure ulcers is lacking adequate pressure ulcer documentation, risk assessment, training, and prevention and treatment guidelines (Tubaishat et al., 2010). The implementation of tissue viability programs including pressure ulcer care in Jordan is a new and emerging part in clinical practice which requires the need for evidence based knowledge and robust research findings.

The current study is valuable to Jordan and to the Arab world. It provides an opportunity to evaluate nurses' knowledge and barriers to utilize pressure ulcer prevention and treatment care, PU documentation, and PU risk assessment scales. The findings of this study can form a baseline for nurses and health care professionals and may also contribute to develop an educational platform on pressure ulcer prevention and treatment at national and global levels.

Methods

Aims

The aims of the study were to determine:

- Jordanian nurses' level of knowledge of pressure ulcer prevention and treatment of hospitalized patients using EPUAP/NPUAP guidelines for pressure ulcer prevention and treatment.

- Nurses' perceived barriers towards PU prevention and treatment, PU documentation, and PU risk assessment in hospitalized patients.

Design

A self-reported cross-sectional survey design was used to collect data from nurses who were providing care to patients with pressure ulcer problems between June 2012 and November 2012.

Sample/Participants

Pressure ulcer care is performed at hospital settings in Jordan. Inclusion criteria were those hospitals having 200 and more beds and having medical, surgical, and critical care units. From a population of governmental (n=30), private (n=65), military (n=11) and university (n=2) hospitals, eleven hospitals (6 governmental, 2 university, 1 military, and 2 private) met the inclusion criteria.

A list of all units in which there were likely to be patients with pressure ulcer including medical, surgical, and critical care units at each selected hospital was obtained from directors of nursing. Only three units (a medical unit, a surgical unit, and a critical care unit) were chosen by means of a random number table from each site and then all registered nurses were surveyed at the selected units.

The study population consisted of registered nurses with Baccalaureate degree who were involved in patient care where direct patient assessment, pressure ulcer prevention and treatment were routine part of their work.

Instrument

A questionnaire was used to collect the data about Jordanian nurses' knowledge and practice of pressure ulcer prevention and treatment. The questionnaire was informed by earlier work (Bostrom et al, 1992; Panagiotopoulou et al, 2002; Mockridge et al, 1999) and pressure ulcer prevention and treatment recommendations published by EPUAP and NPUAP (Clark, 1999 and EPUAP & NPUAP, 2009). An initial questionnaire of 60 items was subjected to validation process by researchers and expert nurses (n=10) who assessed the level of comprehensiveness, clarity, avoidance of ambiguity and content validity. This involved circulating the draft items until there was consensus on content, order and wording. As a result, four items were modified as not properly understood by three evaluators.

A pilot study was conducted using this questionnaire among a sample of forty nurses after access to nurses was sought from the director of nursing in a university hospital. Thirty two completed questionnaires were received. Some items were re-worded to add more clarity and then the questionnaire was revised to combine similar items and to remove misleading or repeated items. A 45-item questionnaire was produced of which content validity was assessed by a panel consisting of three expert nurses who were caring for patients with pressure ulcers and had five years of experience in nursing and two PhD holders who had published work on pressure ulcers. The nurses who had been involved in the pilot study had reported no corrections with the wording, length, and format of the questionnaire and they were not included as part of the main study.

The questionnaire was divided into four parts:

- Demographic characteristics includes gender, age, years of clinical experience, level of current higher education, previous participation in PU research, sources and recent exposure to pressure ulcer education.
- Pressure ulcer prevention interventions: include 16 interventions which were considered effective or ineffective according to EPUAP and NPUAP (Clark, 1999 and EPUAP & NPUAP, 2009) guidelines and expert panel.
- Pressure ulcer treatment interventions: include 29 interventions which were considered effective or ineffective according to EPUAP and NPUAP (Clark, 1999 and EPUAP & NPUAP, 2009) guidelines and expert panel.

Four items from pressure ulcer prevention interventions and seven items from pressure ulcer treatment interventions were reverse coded as defined by the expert panel.

For each intervention, either prevention or treatment, participants were asked to indicate the degree of appropriateness of the interventions according to nurses' knowledge (yes or no)

- Barriers towards pressure ulcer prevention and treatment were measured using list of barriers related to risk assessment, documentation and carrying out PU prevention and treatment practices. This allows respondents to rank the most important barriers in each category.

Ethical Considerations

Ethical approval was sought and granted by the Research and Ethics Committee at the Faculty of Nursing/ University of Jordan and by the Research and Ethics Committee at each hospital involved in the study. Participation was voluntary and anonymity (no personal identification was recorded) of the nurses was ensured.

Data Collection

A detailed explanation about the aims and procedure of the study was given to nurse administrators, head nurses, and charge nurses at participating hospitals. A list of an estimated number of available nurses was prepared from the selected hospitals one day before data collection. At the time of data collection, questionnaires were distributed and handed to nurses through the help of the departments' managers and the charge nurses at all shifts. Each questionnaire had a covering letter explaining the nature of the study, aims, way of completion and return. Self completed questionnaires were then handed over together in an envelope in batches to the researchers by the managers and charge nurses.

Data Analysis

Based on the 45-item questionnaire, nurses' responses were summed up in total scores (normalized to a range of 0,100) about knowledge of pressure ulcer prevention and treatment. Descriptive statistics were used to describe demographic characteristics, level of nurses' knowledge on PU prevention and treatment, and perceived barriers to carry out PU prevention and treatment, PU documentation, and PU risk assessment using frequencies, means and standard deviations. The overall level of nurses' knowledge on PU prevention and treatment was calculated out of 100. Inferential statistical procedures including independent samples t test and one way ANOVA were used to assess the differences between participants' characteristics and their knowledge on PU prevention and treatment. All statistical procedures were performed using SPSS v 16 and produced at $\acute{\alpha}=0.05$ (2-tailed).

Results

The total number of participants who completed the study questionnaire was 216. The number of questionnaires valid for analysis was 194. The majority of participants were having Bachelor degree (n =167, 86.1 %) and about 35.6% (n = 69) of the participating nurses reported that they have not received training or education about PU prevention and treatment. Although, the participants had clinical nursing experience of one to ten years, the majority of them (n=163, 84.0%) never participated in research activity about PU care.

The overall participants' knowledge index was calculated and showed a mean score of 41.6 (SD = 8.8, Range= 19.2-65.3) where knowledge index was normalized to a range (0,100).

Table (1) showed the differences between participants' characteristics and their knowledge towards PU prevention and treatment. Results revealed that nurses' gender significantly (P=0.02) influence their knowledge on PU care.

Table 1 Differences between Participants' Characteristics and Their Knowledge towards PU Prevention And Treatment (N=194)

Nurses' Characteristics		n	M	SD	t-test	ANOVA	P-value
Gender	Male	115	11.4	2.4	2.36		0.020*
	Female	79	10.5	2.2			
Age	20-25 years	66	11.4	2.1		1.02	0.23
	26-30 years	98	10.7	2.2			
	31-35 years	26	11.6	2.3			
	36-40years	4	12.0	1.1			
Current Higher Degree	Bachelor	167	10.6	2.0	-1.15		0.41
	Master	23	11.4	2.7			
Nursing clinical Experience	< 2year	12	11.4	2.1		0.61	0.86
	2-4 years	88	11.4	1.1			
	5-10	92	10.7	2.2			
	11-15	1	10.0				
	16-20	1	11.0				
Source of PU Education	University	110	11.4	2.4	1.1		0.22
	In-service	43	11.0	1.2			
	Conference	5	10.2	2.1			
	Product	12	10.3	1.2			
	other	4	11.0	0.0			
PU research	Yes	22	10.8	2.1	1.59		0.095
	No	163	9.9	2.2			
Last Attend Training on PU	< 1year	77	10.7	2.1		1.52	0.33
	1-2 year	13	11.1	2.2			
	> 2 year	29	11.4	1.2			
	Never	69	11.4	2.2			

*significant at α=0.05 (2-tailed test)

Nurses' perceived Barriers towards PU Prevention and Treatment

Barriers towards PU prevention and treatment were measured using a list of barriers related to assessment, documentation and carrying out PU prevention and treatment practices, all of which presented in tables (2-4). Participants were requested to rank the most important barriers in each category. The most commonly cited possibilities were lack of time, short staff, the patients' condition and lack of resources or lack of equipment.

Results revealed that short staff and lack of time were the most frequently reported barriers to carrying out PU risk assessment (36.67%), documentation (51.7%) and PU care (48.3%). Barriers related to patients' were in the third rank after short staff and lack of time. For example, when the patient is too ill, he/ she may be uncooperative, though, making assessment is difficult. Lack of training and lack of aids were also perceived important barriers. However, lack of knowledge was mentioned as the least important barrier to carrying out PU risk assessment, documentation and PU care.

Table 2: Barriers to Carrying Out PU Prevention and Treatment (N=194)

Barriers to carrying out PU prevention and treatment	Number (%)
Total number of respondents	194 (100%)
Short staffed	50 (25.7)
Lack of time	44 (22.6)
Unstable patient	25 (12.7)
Lack of training, resources, equipment, guidelines	21 (10.8)
Other aspects of care more important/lack of continuity	19 (9.7)
Lack of knowledge	18 (9.2)
Lack of aids	14 (7.2)
Unable to assess	3 (1.5)

Table 3: Barriers to Carrying out PU Documentation (N=194)

Barriers to carrying out PU documentation	Number (%)
Total number of respondents	166 (100)
Lack of time	55 (33.1)
Short staffed	31 (18.6)
Problems with assessment tool	21 (12.6)
Unstable patient	11 (6.6)
Lack of aids	14 (8.4)
Lack of knowledge	14 (8.4)
Forget the assessment	10 (6.02)
Lack of equipment	10 (6.02)

Table 4: Barriers to Carrying out PU risk Assessment (N=194)

Barriers to carrying out PU risk assessment	Number (%)
Total number of respondents	177 (100)
Short staffed	33 (18.6)
Lack of time	32 (18.07)
Lack of training, resources, equipment, guidelines	24 (13.5)
Patient un-cooperative/too ill	22 (12.4)
Lack of equipment	18 (10.1)
Unstable patient	16 (9.03)
Lack of knowledge	14 (7.9)
Problems with assessment tool	9 (5.08)
Unable to assess	9 (5.08)

Discussion

We showed that that nurses' knowledge was in adequate and was not associated with their basic education, age, or years of work experience. These results may be attributed to small study sample. Additionally, the sample did not include nonprofessional staff who may be less likely to attend continuing education or who may have greater problems with literacy and provide PU care in clinical practice. Hulsenboom, Bours, and Halfens (2007) found that the demographic variables including age and experience of nurses had no significant influence on PU prevention. In contrast, Choa, Parkb, and Chunge (2011) analayzed nurses' characteristics in relation to PU prevention and found that more PU prevention was documented by those who were younger, less experienced, and more educated.

In this study, influence of age, previous participation in PU research and level of education may be masked due to unequal numbers of participants at these variables. For example, the study included only 23 master holders compared to 167 baccalaureate nurses and the majority of nurses were 25 to 30 years of old.

Moreover, the results of this study showed no relationship between nurses' knowledge and working experience which highlights un availability of tissue viability program, un availability of national PU guidelines, and poor dissemination of PU knowledge in practice.

Although results of this study were similar to those of Pieper and Mott (1995), Panagiotopoulou and Kerr (2002), Abou El Enein and Zaghloul (2011) and Beeckman et al. (2011), different methods, knowledge test, and evaluation criteria were used. These studies suggested increased PU knowledge and developed guidelines to be implemented in clinical practice.

Apparently, nurses' knowledge about PU was based on expert opinion and tradition rather than scientific evidence. Moreover, dissemination of knowledge on PU care also found to be influenced by barriers related to the use of guidelines, lack of staff and lack of time. Similarly, Moore and Price (2004) pointed out a gap between theory and practice despite nurses' positive attitudes towards PU prevention due to barriers such as lack of staff and lack of time. It is likely that more highly educated and knowledgeable nurses would be more likely to employ a risk assessment tool or grading system, or have higher preventive and treatment knowledge (Saleh et al, 2009).
Merely identifying a problem will not provide action. There is typically a theory-practice lag. Research dissemination issue is not restricted to medicine. In an earlier paper on pressure ulcers (Anthony, 1996), even textbooks with highly credible editors and authors showed a lack of awareness of research papers published decades before, and gave advice that was contrary to research findings and in many cases was frankly dangerous. While identification does not provide action it is a first step when you want to change practice. Such change of clinical practice could be part of a wider change management program, using, for example, the NHS Five Frames (NHS, 2009).

Additional explanations of lack of nurses' knowledge on PU care. One is related to educational opportunities; availability, timing, staffing, and costs. Second, staff turnover has been increased in the last five years (Hayajneh et al., 2009), making it difficult to a facility to maintain essential PU education and to maintain staff PU knowledge up to date. Hayajneh et al. (2009) considered the turnover of Jordanian registered nurses in hospitals as a significant problem that requires effective strategies to deal with.

Raising awareness of pressure ulcer preventive and treatment interventions using a variety of approaches (education, use of risk assessment tools, grading scores and clinical guidelines) are probably all useful. Guidelines implementation requires a comprehensive approach (Clark et al, 2005) including education and refresher courses for nurses (Hulsenboom et al., 2007).

Strengths and Limitations

The data are from self-report questionnaires which may not accurately reflect clinical practice. Data analysis employed only variables that were significant in univariate analysis and it is possible some variables that were not significant in these analyses would be in combination with other variables. The questionnaire was developed and had not been tested other than the piloting discussed above, and content validity by the team of experts. There was not a balance for positive and negative responses in the survey, which could lead to response bias.
The study sample size is not sufficient to address the research aims, but this is one of few studies conducted on knowledge of prevention and treatment of pressure ulcers in the Arab world.
The potential impact of limitations on this study are that variables we did not consider may be relevant, in particular a variable not found significant in univariate analysis could act as a confounding variable. Future studies may consider having equal numbers of positively and negatively worded questions in the questionnaire to avoid response bias.

Conclusion

Implementation of pressure ulcer prevention and treatment appears to depend primarily on knowledge, but may benefit from a range of programs and use of risk assessment tools and grading scores, availability of staff and timing. A pressure ulcer education provides an opportunity to improve understanding of pressure ulcer, keep abreast of current knowledge on pressure ulcer, and eliminate patient's suffering. Additionally, the curriculum of degree nurses may need to be explored to see that it addresses a pressure ulcer care. This should address the theory-practice gap and reduce the time lag between research findings and implementation.

In conclusion, Jordanian nurses' knowledge on PU prevention and treatment was inadequate. Further, adequate dissemination of PU prevention and treatment guidelines seems to be a prerequisite to improve quality of PU prevention and treatment. Improving practice requires a multi-faceted approach to assure adequate support to make changes reflected on patients' outcomes.

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