

Nurses' knowledge and Perceived Barriers About Pressure Ulcer Prevention for Admitted Patients in Public Hospitals in Addis Ababa, Ethiopia

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Abstract: *Background:* There is limited evidence on nurses' knowledge and perceived barriers to prevent pressure ulcer in Ethiopia. The present study aimed to assess nurses' knowledge and perceived barriers to prevent pressure ulcer in public hospitals in Addis Ababa, Ethiopia. *Methodology:* A self-reported cross-sectional survey design was used to collect data from 356 nurses who were providing care to patients with pressure ulcers between 21 April and 28 May 2015. We used a structured questionnaire, which was adapted from previous studies to collect the data. Data were coded and entered in computer using EPI data version 3.1 statistical packages, and transported into SPSS version 20 for data analysis. 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. *Results:* Findings of the present study revealed that the majority of nurses who participated in this study had unsatisfactory knowledge (63.85%) as regards the pressure ulcers management. Nurses were questioned to specify their agreement about the presence of specific barriers in the work environment. Shortage of staff was the utmost frequently cited barrier to carrying out PU-prevention measures (83.1%), followed by limited resources (67.7%) and lack of guidelines (policies) about PU prevention (59.8%). *Conclusions:* In-service training and educational program should be designed for nurses to enhance their Knowledge and practice. Satisfactory dissemination of PU prevention and treatment guidelines appears to be essential to advance quality of PU prevention and treatment.

Keywords: Pressure Ulcers, Knowledge, Perceived Barriers, Pubic Hospitals, Addis Ababa, Ethiopia

1. Background

Pressure ulcers are defined as "localized injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear and/or friction [1].

The survey conducted across 26 hospitals in Belgium, Italy, Portugal, Sweden and the United Kingdom (UK) reported pilot pressure ulcer prevalence 1078 (18.3%) among 5947 patients. By country, the proportion of patients surveyed who had pressure ulcers were varied- Italy (8.3%),

Portugal (12.5%), Belgium (21.0%), UK (21.9%) and Sweden (22.9%) [2].

The study in West Scotland revealed that the prevalence of pressure ulcers was 7% with majority Grade one and two according to the European Pressure Ulcer Advisory Panel (EPUAP). The majority of ulcers were on the sacrum, hips and Ischia tuberosities [1, 3] In United States nearly 1 million people develop pressure ulcers annually and approximately 60,000 acute care patients die from related complications [4]. The Institute for Healthcare Improvement (IHI) estimated a total national cost of \$11 billion per year to treat pressure ulcers and the cost of treating a single full-thickness pressure

ulcer to be as high as \$70,000 per ulcer which increased from 21.4% to 74.6% in between 2006 and 2008 [5]. The burden of living with pressure ulcers (PUs) extends beyond costs to significantly limiting many aspects of an individual's physical health, social, financial and psychological quality of-life [6].

Pressure ulcers occur across all health care settings, with the highest incidence in the hospital which is estimated to be 57%- 60% of ulcers occur in the hospital usually within the first two weeks of admission [7, 8]. The incidence differs by care area, with patients in orthopedics and intensive care at greatest risk. The prevalence of pressure ulcers ranges from 1% to 11% in medical wards, 4.7% to 66% in surgical wards and in intensive care unit (ICU) from 14% to 42% [9, 10]. Data from Ethiopia (Bahir Dar) showed that pressure ulcers are a significant health problem among hospitalized patients, with prevalence 16.8% [11].

According to the American Nurses Association (ANA), pressure ulcer prevention is primarily a nursing responsibility though it is a multidisciplinary activity. Nonetheless, the current problem of nurses for hospitalized patient is poor bed side care. A targeted preventive approach will be less costly than one that is focused on treating already established ulcers [12].

Lack of knowledge and skills, and negative attitudes in PU prevention contributes significantly to the occurrence or worsening of PU. Raising nurses' knowledge about PU prevention among nurses not only increases the quality of PU care but also reduces hospital stays, and the number of patients suffering from this condition [13].

Several studies revealed that shortage of supplies for pressure ulcer management and prevention and shortages of human resource for health, particularly nurses, were the most cited barriers to carrying out appropriate pressure ulcer management [14-16]. However, there is dearth of evidences concerning nurses' knowledge, attitude and practice towards pressure ulcer prevention and perceived barrier to prevent pressure ulcer in Ethiopia. Therefore, the present study aimed to assess nurses' knowledge and perceived barriers to prevent pressure ulcer in public hospitals in Addis Ababa, Ethiopia.

2. Methods

2.1. Settings

The study was conducted in the capital city of Ethiopia, Addis Ababa. The study was carried out in a sample of four hospitals because pressure ulcer care is performed at hospital settings.

2.2. Participants and Sampling Technique

For the present study, all registered nurses working in the six hospitals were summoned to participate in the study. The study population consisted of registered nurses with Baccalaureate degree and above who were involved in patient care where direct patient assessment, pressure ulcer prevention and treatment were routine part of their work. Participating nurses were full-time workers on the permanent

staff of the hospitals from different specialties. Nurses with no direct contact with the patients were excluded from the study.

Hospitals with more than 100 beds and having medical, surgical, and critical care units were included in the study. From a population of public hospitals six hospitals (Zawuditu Memorial Hospital, Alert Hospital, Menilik II Hospital and Tirunesh Beijing Hospital) met the inclusion criteria. Then a list of all units in which there were possibly patients with pressure ulcer at each designated hospital was obtained from nursing directors' offices.

3. Data Collection Tools

The instrument used to collect the data for this study was adapted from the previous works [17, 18]. Some of the items in the existing tools were deleted, as they were not relevant in Ethiopia. For the purpose of the current study, some demographic questions were added. The questionnaire was divided into three sections: demographic data, Nurses' knowledge and Perceived barriers toward PU prevention. Demographic data included age, marital status, educational level and area of specialty of the nurses. Nurses' knowledge about PU prevention consisted of 20 statements originating from Pressure Ulcer Knowledge Test (PUKT) with 3 options (True, False and I don't know). Perceived barriers toward PU prevention consists of 11 possible barriers faced by nurses. Nurses showed their agreement with these barriers using the same 5-point Likert scale (from 'strongly disagree' to 'strongly agree').

An original questionnaire items were subjected to validation process by researchers and expert tutor nurses who assessed the level of completeness, clarity, avoidance of ambiguity and content validity. Consequently, five items were modified as not correctly understood by two evaluators.

The original instrument was translated into Amharic, and then back translated to English to resolve any inconsistencies between the original and the translated version. Back translation is a standard procedure for translating a research questionnaire from English to other languages [19].

4. Data Collection Procedure

Data were collected by six trained head nurses. The head nurses at the study sites were inquired for their support in delivering the questionnaires on behalf of the principal investigators. All head nurses in the selected hospitals ardently decided to collaborate. With each questionnaire given, a participant information sheet was delivered to describe the study, its purposes and procedures. Nurses who agreed to partake were requested to return the questionnaire folded and fastened to their head nurses within one-week period.

Measures were taken to ensure the quality of the collected data. A detailed explanation about the aims and procedure of the study was given to nurse administrators, head nurses, and charge nurses at participating hospitals. The questionnaire was pretested among five nurses that were not sampled for

the study and necessary changes were then made.

5. Data Analysis

Data were coded and entered in to computer using EPI data version 3.1 statistical packages, and transported into SPSS version 20 for data analysis. 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. Frequencies and percentages for each item in the knowledge and barriers sections were calculated.

6. Ethical Consideration

Ethical approval was sought and granted by the Research and Ethics Committee at the department of Nursing and Midwifery, College of Health Sciences, School of Allied Health Sciences, Addis Ababa University. Permission to conduct the study was obtained from Addis Ababa City Administration Health Bureau and each hospital involved in the study.

All study participants were adequately informed about the purpose, method and anticipated benefit of the study by the data collectors. Written consent was obtained from each participant and confidentiality and anonymity of the study subjects was maintained.

7. Operational Definitions

Level of knowledge: Each answer was given "1" score for correct answer and "0" for incorrect answer. The total score

was (20) and it was then converted into percentage as follows: Those who obtained less than 75 % (less than 15 score) are considered having an unsatisfactory knowledge level and more than 75% (more than 15 score) are considered satisfactory.

8. Results

8.1. Socio-demographic Characteristics of the Nurses

The questionnaires were administered to a total of 369 nurses working in four public hospitals in Addis Ababa. Thirteen questionnaires were not returned. Totally, 356 questionnaires were correctly completed and returned making a response rate of 94.5%.

Among 356 nurses 128 (36%) and 228 (64%) were males and females, respectively. The greater proportions of the participants were female nurses 228 (64%) and the mean age of participants was 29 years. Most participants were (61.6%) were single followed by (36.5%) married. Sixty five percent of the participants had first degree followed by 27% diploma holders and most of them had over 5 year's work experience. Participant nurses were working in a wide range of clinical areas, with the highest percentage (30%) working in medical wards.

8.2. Knowledge of Pressure Ulcer Prevention

Participants were asked 20 questions to assess their knowledge on pressure ulcer prevention, and they were categorized in to two groups based on their score. Findings of the present study revealed that the majority of nurses who participated in this study had unsatisfactory knowledge level (63.85%) as regards the pressure ulcers management. (Table 1)

Table 1. Frequency distribution of nurses' knowledge score towards pressure ulcer prevention in Public Hospitals in Addis Ababa, June 2015.

Nurses' knowledge score of pressure ulcer prevention (N=356)				
Incorrect		Correct		Variables
%	N	%	N	
4.2	15	95.8	341	1. Risk factors for development of pressure ulcers are immobility, incontinence, impaired nutrition, and altered level of consciousness.
64	228	36	128	2. Hot water and soap may dry the skin and increase the risk for pressure ulcers.
61.5	219	38.5	137	3. It is important to massage bony prominences.
32	114	68	242	4. All hospitalized individuals at risk for pressure ulcers should have a systematic skin inspection at least daily and those in long-term care at least once a week.
29.5	105	70.5	251	5. The first sign of pressure ulcer development is open sore
27.2	97	72.8	259	6. All individuals should be assessed on admission to a hospital for risk of pressure ulcer development.
34.8	124	65.2	232	7. A turning schedule should be written and placed at the bedside.
49.4	203	50.6	153	8. A Braden scale is risk assessment tool used for assessing pressure ulcer.
21.9	78	78.1	278	9. Patient skin should be clean and dry to prevent risk of pressure ulcer development.
65.2	232	34.8	124	10. Persons confined to bed should be repositioned every three hours.
27.5	98	72.5	258	11. Heel ulcer is prevented by putting pillow under the patient's leg.
49.4	176	50.6	180	12. A low-humidity environment may predispose a person to pressure ulcers.
24.2	86	75.8	270	13. For persons who have incontinence, skin cleaning should occur at the time of soiling and at routine intervals.
15.4	55	84.6	301	14. Adequate dietary intake of protein and calories should be maintained during illness.
10.7	38	89.3	318	15. Vitamin C & E are important to maintain skin integrity.
45.5	162	54.5	194	16. Serum albumin test is the appropriate laboratory test for nutritional assessment of pressure ulcer patient.
45.2	161	54.8	195	17. The head of the bed should be maintained at the lowest degree of elevation no higher than a 30 degree angle consistent with medical conditions.
71.3	254	28.7	102	18. A person who cannot move him or herself should be repositioned every two hours while sitting in a chair.
27.8	99	72.2	257	19. Friction may occur when moving a person up in bed.
16.3	58	83.7	298	20. Educational programs may reduce the incidence of PUs.

8.3. Barriers to Pressure Ulcer Prevention

Nurses were questioned to specify their agreement about the presence of specific barriers in the work environment (Table 2). Shortage of staff was the utmost frequently cited barrier to carrying out PU-prevention measures (83.1%), followed by limited resources (67.7%) and lack of guidelines (policies) about PU prevention (59.8%) (Table 2).

Table 2. Frequency distribution of nurses' perceived barriers to prevent pressure ulcer in Public Hospitals in Addis Ababa, June 2015.

Nurses' perceived barriers for preventing PU (N= 356)	Frequency (%)
1. Poor access to literature	177 (49.7)
2. Heavy workload and inadequate staff	296 (83.1)
3. Lack of universal guide line on prevention of pressure ulcer	213 (59.8)
4. Inadequate training coverage of pressure ulcer prevention	225 (63.2)
5. Uncooperative patients	140 (39.3)
6. Lack of job satisfaction in nursing profession	200 (56.2)
7. Presence of other priorities than pressure ulcer	209 (58.7)
8. Shortage of resources (equipment, facilities)	241 (67.7)
9. Inadequate knowledge about pressure ulcer among nurses	96 (27)
10. Lack of multidisciplinary among staff nurses	103(28.9)
11. I don't have any challenge	7(2)

9. Discussions

The current study aimed to assess nurses' knowledge and perceived barriers to prevent pressure ulcer in public hospitals in Addis Ababa, Ethiopia. Findings of the study revealed that the majority of nurses who participated in this study had unsatisfactory knowledge level (63.85%) as regards the pressure ulcers management. The possible reason to explain their unsatisfactory level of knowledge might be due to lack of learning resources for nurses to up-date their knowledge.

Our finding is similar with other previous studies. In their Jankowski & Nadzam [20] stated that lack of nurse's knowledge is still seen as one of the main causes for pressure ulcer development, subsequently the pressure ulcers are progressively used as an indicator of the quality of care. This finding also agrees with Islam (Islam, M.S. 2010, unpublished data) who revealed that nurses need further continuing education and training program regarding pressure ulcer prevention that could influence positive attitude eventually leading to effective nursing role to pressure ulcer prevention.

It is demanding that a PU training programme should be adopted and applied by the stakeholders in Ethiopian clinical settings. This is expected to advance the nurses' knowledge in the topic studied. In-service training is essential to maintain the competency required to make well-informed decisions. For instance, Nurses with a good knowledge base make better clinical decisions [21]

As stated earlier, there is a scarcity of study about the difficulties nurses facing during PU prevention. In our study, shortage of staff was the utmost frequently cited barrier to carrying out PU-prevention measures followed by limited resources and lack of guidelines (policies) about PU

prevention with similar barriers reported by other studies [21-23]

Staff shortage, which was the furthestmost repeatedly cited barrier, is of great concern. For example, some preventive methods including repositioning are difficult to do without assistance, which might lead nurses not to priorities PU prevention [23]. This agrees with the results of Moore and Price [18] who found that majority of the nurses reported lack of staffandtime as barrier to implement effective care practices related to prevention of pressure ulcer.

Lack of resources was another obstacle to PU prevention. This might be separated into two parts; the first is the endowment of equipment and devices used to prevent PUs and the second is the presence of educational resources and facilities, including libraries and databases for the nurses to improve their knowledge and skills in PU prevention. Previous studies revealed that shortage of PU-prevention equipment is an obstacle to this practice Lack of access, awareness and understanding of the relevant literature and educational resources is a barrier to PU prevention [23-24].

Ethiopian Nurses face very limited access to library services and electronic databases in the hospitals. As Hunt [24] stated, when the nurses do not read scientific journal articles, they will not know about research findings. In the absence of such knowledge, they are not presumed to progress their practice. It is prominent that including research findings in PU care will considerably increase the practical implementation of PU knowledge. Also lack of hospital policies for utilizing risk assessment tools is contributing factors for nurses to implement quality care for pressure ulcer, which is similar with the previous study (Hamed, S.M. 2009, unpublished data).

Pressure ulcers have been designated as one of the utmost costly and physically devastating complications in the 20th century. Pressure ulcers are the third most expensive disorder after cancer and cardiovascular diseases [26]. Pressure ulcer was a substantial financial problem to any health care system and had adverse effects on achieving goals of care. Pressure ulcers come at a high cost to everyone. They result in pain, suffering, diminished quality of life and even death for some residents. Pressure ulcer was the third most expensive morbidity due to prolonged hospitalization, and the need for intensive nursing care for pressure ulcer [27].

The current study was anticipated to describe the nurses' knowledge and barriers as regards pressure ulcer prevention and management. The outcomes of this study contribute to nursing education, nursing practice, and prospect research in nursing. It will offer baseline data for health service managers for an initiation of staff development in order to improve quality of care. The study findings will also provide a distinctive survey of level of nurses' knowledge and barriers about pressure ulcer prevention and management; thus, contributing to body of knowledge on this subject.

The findings of this, nonetheless, study should be interpreted in the light of a number of limitations. Firstly, the

use of a self-reported questionnaire is the major limitation of this study. Using this method to identify barriers to practice PU prevention might involve some risk, though qualitative interviews can let participants to liberally highlight their concerns and obstacles concerning practices of PU prevention. Secondly, the study was conducted only in Public hospitals in Addis Ababa, Ethiopia. Future research can incorporate the perspectives of nurses working in private hospitals. Thirdly, the study sample size is not representative to address the research aims; nevertheless, this is one of limited studies conducted on knowledge and barriers of prevention and treatment of pressure ulcers in Ethiopia. Hence, any generalization of the results of this study must be made with caution.

10. Conclusion

Implementation of pressure ulcer prevention and treatment depends mainly on knowledge. In-service training and educational program should be designed for nurses to enhance their Knowledge and practice. Successful practice entails a multi-faceted method to guarantee sufficient support to make changes revealed on patients' outcomes and raising awareness of pressure ulcer preventive and treatment interventions using a variety of approaches including use of risk assessment tools, grading scores and clinical guidelines. Satisfactory dissemination of PU prevention and treatment guidelines appears to be essential to advance quality of PU prevention and treatment.

Conflict of Interest and Funding

Funding for this study was made possible through grants offered by Addis Ababa University post graduate office. The authors declare that they have no competing interests.

Authors' Contributions

WE, BM and ZA conceptualized the paper, searched literature, trained field researchers for data collection and wrote the results and discussion sections. WE and BM participated in data analysis, interpretation and in critical review of the manuscript, and drafted the manuscript for publication. All authors read and approved the final manuscript.

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