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Original Research Article

Prevalence and clinical evaluation of Pressure Ulcers using Braden scale from orthopedics wards of a tertiary care teaching hospital

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Abstract

Background: The need for research into bed sores in orthopedic patients is evident from the increased number of beds they occupy and the considerable morbidity from pressure sores in orthopedic wards.

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Objective: To analyze and ascertain the prevalence and clinical evaluation of Pressure Ulcers from orthopedics wards of a tertiary care teaching hospital.

Material and methods: The present prospective study was conducted by the Department of Orthopedics of a tertiary care teaching hospital from July 2009 to August 2014 among 228 patients seeking care for trauma to proximal femur, hip joint, pelvis and undergone elective surgery or surgery for removal of old implants. Braden scale was used for predicting pressure ulcers in the study subjects. All patients showing the potentiality of developing clinical signs of bed sores were selected and put on the study list. Patients aged ≥ 80 years, sick patients due to terminal illnesses and the worst pressure sores were excluded from the study.

Results: Out of total 228 study subjects, 61 subjects developed pressure ulcers giving a prevalence of 26.75%. According to Braden Scale, 16.39% of patients were at high risk for developing the pressure ulcers. 68.85% of ulcer patients were treated for trauma mostly for fracture hips, pelvis or proximal femur or spine. Majority of patients (60.66%) developed pressure ulcers after the second week of admission. The lengths of stay of patients with bed sores exceed the stay of non sores patients on orthopedic wards by several times. Sacrum was the most commonly affected part of body.

Conclusion: The findings of the current study highlight the multi-factorial etiology of pressure ulcers and they are preventable. Its prevention would require multidimensional approach including the collaboration of all the nursing and surgical staff. Frequent patient turning, close monitoring and frequent skin checks would delay the onset of pressure ulcers.

Key words

Prevalence, Pressure ulcers, Orthopedics, Clinical evaluation, Braden scale.

Introduction

Pressure ulcer is defined as skin breakdown and continuum of tissue damage of ischemic etiology secondary to high external pressure which usually occurs over prominences. Over bony prominences for 2 hours or more is enough to cause an ischemic wound [1]. Individual who cannot independently reposition tend to be at the greatest risk for ulcer development [2]. Pressure ulcers are the result of interplay of various intrinsic and extrinsic factors. The intrinsic factor includes immobilization, cognitive deficit, chronic illnesses, poor nutrition, use of steroids and aging [3].

Orthopedic wards already contain a higher proportion of beds with pressure sores than those of any other specialty. Orthopedic patients with pressure ulcers experience greater morbidity and mortality than patients without pressure ulcers [4]. Pressure ulcers are associated with poorer quality of life, loss of function, greater risk of death, and higher health care costs [5]. Hip fractures and hip replacements are two of the most common reasons of orthopedic ward admission and are particularly associated with secondary development of pressure sores [6].

The need for research into bed sores in orthopedic patients is evident from the increased number of beds they occupy and the considerable morbidity from pressure sores in orthopedic wards. Possibility of development of pressure sore should be anticipated in admitted at risk patient's viz. old age, patient with malnutrition or anemia and long stay in bed or complicated multiple surgeries. Therefore present study was planned to conduct with an objective to analyze and ascertain the incidence and clinical evaluation of pressure ulcers from

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orthopedics wards of a tertiary care teaching hospital from rural Northern India.

Material and methods

The present prospective study was conducted by the Department of Orthopedics of a tertiary care teaching hospital of Uttar Pradesh from a period of five years from July 2009 to August 2014. The patients seeking care for trauma to proximal femur, hip joint, pelvis and undergone elective surgery or surgery for removal of old implants at Orthopedics department of the institute during the study period formed the study population. Purposive sampling design was adopted in this study. A total of 228 patients were admitted with such orthopedic problems for treatment and observed for the possibility of occurrence of pressure ulcer in orthopedic ward. Study subjects were observed for the potentiality of development of pressure ulcers in patients in orthopedics ward over the period of five years.

Braden scale was used for predicting pressure ulcers in the study subjects [7]. All patients showing the potentiality of developing clinical signs of bed sores were selected and put on the study list. The lowest risk scoring was 6 points and the highest was 20 points, the low risk patient should have 15-16 points on Braden Scale, the moderate risk patient should get 13-14 points while the high risk patient score 12 points and less. Patients aged ≥ 80 years, sick patients due to terminal illnesses and the worst pressure sores were excluded from the study. These patients were primarily excluded from the study on the basis of the greater risk of death during study period.

The relevant data was collected by a trained staff supervising patient in the ward on daily basis during the period of stay. A performa was designed in consultation with the orthopedic experts to capture the required details. All findings concerning the patient and ulcer development were documented like name, age, sex, onset of ulcer, site, size, types and number of sores and length of stay.

After compilation of collected data, analysis was done using Statistical Package for Social Sciences (SPSS), version 20 (IBM, Chicago, USA). The results were expressed as proportions. Chi-square (χ^2) test was applied to test the difference across the groups and $p<0.05$ was considered statistically significant.

Results

A total of 228 patients were assessed for being at risk of developing pressure sores by using Braden scale for predicting pressure ulcer i.e. for assessing risk of development of pressure sore. Data was analyzed in terms of prevalence, onset, types and number and the most common sites of pressure sores, length of stay in hospital with various types of treatment delivered to these patients in orthopedic wards.

Out of total 228 study subjects, 61 subjects developed pressure ulcers giving a prevalence of 26.75%. These patients showed different level of risk. According to Braden Scale, 30 of our patients (49.18%) were at low risk group, 21 patients (34.43%) were at moderate risk patients whereas remaining 16.39% of patients were at high risk for developing the pressure ulcers as per **Table – 1**.

Table - 1: Risk distribution of pressure sore patients according to Braden Scale.

Risk Group	Low Risk	Moderate risk	High Risk
Frequency	30	21	10
Percentage	49.18	34.43	16.39

Types of treatment delivered to the patients

Out of the 61 patients who developed pressure sores in this study, 42 (68.85%) of ulcer patients

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were treated for trauma mostly for fracture hips, pelvis or proximal femur or spine. 11 patients (18.03%) were admitted for elective surgery and 7 patients (11.48%) were treated for removal of old implants. One patient (1.64%) was admitted for conservative treatment. Out of these 42 patients treated for trauma, the most common interventions done were internal fixation of the hip, femur and pelvis done for 26 patients, 10 Females patients and 14 males. Hemi- and arthroplasty surgery were done for 11 patients, 8 females and 3 males. While spinal surgery were 5 patients, 2 females and 3 male patients.

Sex and age wise prevalence rate of pressure sores

Chances of development of pressure sores increases with increasing age. Prevalence of pressure sores rose to 79.16% in the age group of 71-80 years and this observation was found to be highly statistically significant ($p<0.001$) as per **Table – 2**.

Bed sore suffering female patient was forty patients (39.05%) out of total of 105 female patients and male patients were twenty patients (16.26%) with bed sore out of total of 123 male patients under study with overall prevalence of 26.75%. This observation was found to be highly statistically significant ($p<0.05$) as per **Table – 3**.

Onset of pressure sores

Ten patients (16.39%) developed pressure sores in the first week after admission whereas majority (60.66%) developed them after the second week of admission as per **Figure – 1**.

Number of pressure ulcers

About 61% of patients had one ulcer, 16% men to 45% women. While 39% had multiple ulcers, 9% of men and 30% of women.

Body distribution of ulcers

The pressure sores were distributed over the sacrum's in 49%, at the heels in 25% and the remaining over the buttocks and at greater trochanters.

Length of stay

The lengths of stay of patients with bed sores drastically exceed the stay of non sores patients on orthopedic wards by several times. The non ulcer patient stays in hospital with mean of 7.2 days per patient, while ulcer patient mean stay exceeds 4.4 weeks per patient.

Discussion

In this study, prevalence rate of pressure sores among study subjects was found to be 26.75% which is much higher than the prevalence rate reported others [8, 9]. Regarding timing of onset of pressure sores after admission, majority of patients (60.66%) developed them after the second week of admission. Pressure ulcers are often described as indicator of the quality of care. These figures would correlate well to the quality of nursing care and ward facilities available to our patients. Patients undergoing orthopedic procedures are at risk of pressure ulcers formation during the phases of peri-operative period for variety of reasons, top in order is the low nursing care [10]. This could be due to shortage of man power in the wards also.

Regarding categorization of patient according to Braden scale showed that most of the patients were falling in the low risk and moderate risk groups and the least were in high risk. One possible explanation can be given that, because most of them tend to be younger and healthier as compared with the high risk group.

Not surprisingly our study showed that the prevalence of ulcer rises steadily with age. It was observed to be highest among most elder group.

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Another study by Jeny RS was also in concordance with our observations [11].

Approximately three times as many patients with fractures 70% as patients having elective surgery and patients admitted for removal of old implants 30% reflect difference in risk factors between the two groups of patients. This might be due to certain selection criteria to qualify to undergo elective surgery such as age and health than those cases treated for trauma.

No clear connection for the cause between the operation and the onset of pressure ulcer, this reflects the possibility of multi-factorial causes [12]. It is known that pressure ulcers result due to interplay of various intrinsic and extrinsic factors. Important risk factors for the genesis of pressure are patient age, his/her mental health, type and site of trauma, site and size of surgery, his/her nutritional status, his/her general health and other associated chronic diseases apart from the type of nursing care presented to them in the ward [13]. Period of stay in orthopedic ward is well known contributing factors [5]. Bad general health and chronic illnesses are well known factors for the liability of high incidence of bed sores due to increased risk of friction and shear [14]. Frequent patient turning, close monitoring and frequent skin checks are important factors in the prevention of pressure ulcer.

Conclusion

The findings of the current study highlight the multifactorial etiology of pressure ulcers and they are preventable. Its prevention would require multidimensional approach including the collaboration of all the nursing and surgical staff from different specialty like orthopedic surgery. The development of pressure sores was surely the reason behind delay of the discharge of patients and increasing the length of stay in hospital. Frequent patient turning, close monitoring and frequent skin checks would delay the onset of pressure ulcers.

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Table - 2: Prevalence and age wise distribution of bed sore development among the study subjects.

Age groups (in years)	Sore patients	No sore patients	Total group	Prevalence	Level of significance
< 50	2	43	45	4.65%	0.000*
51-60	9	76	85	10.59%	
61-70	31	43	74	41.89%	
71-80	19	5	24	79.16%	
Total	61	167	228		
*p<0.001, Highly significant					

Table - 3: Prevalence and gender wise distribution of bed sore development among the study subjects.

Gender	Patients with Bed sore	Patients with No sore	Total group	Level of significance
Male	20 (16.26%)	103 (83.74%)	123 (100%)	0.001*
Female	41 (39.05%)	64 (60.95%)	105 (100%)	
Total	61 (26.75%)	167 (73.25%)	228	
*p<0.05, Significant				

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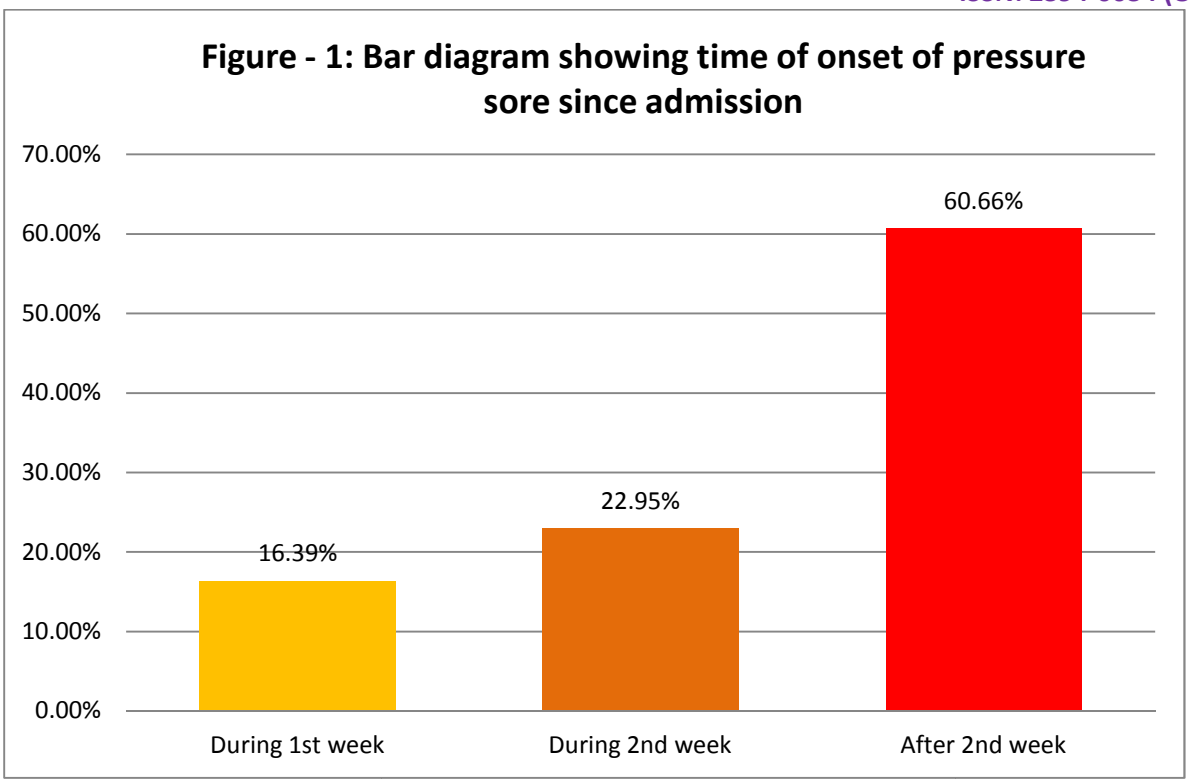

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