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A report of clinical audit for prevention and improvement of bedsore in southwest Iran

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Abstract

Objective: Pressure ulcer is areas of necrosis caused by external pressure on bony prominences with a prevalence of 10–22%.

Methods: This study was conducted to improve prevention and care of bedsore by clinical audit at Ahvaz Golestan Hospital. We included hospitalized patients at the risk of bedsore in general, special, and emergency units at Ahvaz Golestan Hospital during a 6-month period. In accordance to the clinical audit cycle, the current situation was assessed by observation and consultation. After finding weakness points, proper interventions were implemented based on NICE guidelines for bedsore. Subsequently, another audit was performed to assess the effectiveness of intervention.

Results: Comparison of results before and after intervention showed an increase in all studied variables. The changes in studied variables are listed as follows: bedsore reduction (p=0.001), patients' assessment during the first 6 hours of hospitalization (p=0.008), assessment of external pressure (p=0.001), change position (p=0.001), care standards (p=0.170), and skin friction (p=0.001). The highest increase was seen in change position (p=0.001) and the lowest increase was seen in maintaining adequate skin hygiene (p=0.360).

Conclusions: Clinical audit led to improvement of prevention and treatment quality of bedsore, and also formulation and implementation of standards of care.

Keywords: clinical audit; NICE guideline; pressure ulcer; prevention

Introduction

Pressure ulcer or bedsore is an area of necrosis caused by external pressure on bony prominences and areas without adequate blood flow.[1, 2] In recent decades, some researches have shown a 10–22% prevalence of pressure ulcer.[3] Even in most developed countries, despite new technologies and providing the best nursing care, the rate of death is high because of pressure ulcer. The mortality rate of pressure ulcer is approximately 6000 people each year in the United States.[4]

The cost of bedsore treatment is a large burden on patients and healthcare facilities. An estimated $500–$40,000 is needed for the treatment of each bedsore in the United States.[5]

Bedsore is classified into four types: (1) erythema or redness without pallor, (2) slight decrease in skin thickness, (3) severe decrease in skin thickness, and (4) bone, tendon, and muscle damage.[3] Most pressure ulcers tend to become chronic, for example, it takes 10–12 weeks for a grade 4 ulcer to heal.[4] Intensive care can help to improve a bedsore. The use of preventive devices can also inhibit the worsening of sores. Hydrocolloid dressings can also promote healing.[4]

The most important preventative step is to find high-risk patients and treatment method depends on the pressure ulcer grade. Prevention of pressure ulcer can have important health consequences and can be more effective than treatment.[6] Although not all pressure ulcers can be avoided, most of them can be prevented by appropriate care. The initial assessment in preventative strategies should identify risk factors.[3] Wound healing may not be rapid; however, factors such as pressure distribution, adequate nutrition, and optimal management can help accelerate this process.[3] One of the main points, which reflect the quality of care of patients at risk, is to detect developing marks at the onset of pressure ulcer. Moreover, the feeling of responsibility in caregivers can be effective in the quality of care and preventing of sore worsening.[7]

Clinical audit is a quality enhancement process that aims to improve patient care and their outcomes through intervention and the change with the use of clear criteria.[3]

The aim of this study was to evaluate patients at risk, promote prevention of pressure ulcer, increase the quality of patient care, and ultimately reduce the number of patients with pressure ulcer through clinical audit.

Materials and Methods

This prospective study was performed on patients at risk for ulcers hospitalized in Ahvaz Golestan Hospital's general, intensive, and emergency units from September 2013 to March 2014.

A total of 208 patients at the risk of pressure ulcer were enrolled in the study according to hospitalization date. Children under 12 years of age were excluded from the study. The Ethics Committee of Ahvaz Jundishapur University of Medical Sciences approved this research project.

Hospital supervisors using a questionnaire and achieved the initial evaluation. Three professors of dermatology verified a standard clinical audit questionnaire. In this study, variables were assessed and measured (Table 1). After measurement,

the variables were compared to Nice guidelines in order to estimate the difference between our care and the standards of care and treatment (Table 2). Three months after the initial surveillance, a supervisor used questionnaires, observations, and interviews to review the patients' status. Data were analyzed using SPSS16, and statistical tests of Chi-Square and Fisher's McNemar. P value of less than 0.05 was considered significant.

Table 1. **Influential bedsore variables before and after intervention.**

	Variables
1	Access of patients to preventive devices
2	Evaluation of patients in the first six hours of hospitalization
3	Inspection of vulnerable and high-risk areas of the body
4	The assessment of external pressure in patients
5	Patients position changing by nurses
6	Implementation of standards of care for patients
7	Understanding of the patients' skin friction
8	The use of pressure distributors in patients during surgery
9	Participation of patients in the implementation of care process
10	Recording of the results of assessment and interventions for patients with pressure ulcer
11	Patients' participation in the implementation of care process
12	Effective monitoring of the implementation of the treatment and care protocol for patients with pressure ulcer

Table 2. **Interventions used in clinical audit to standardize bedsore care.**

	Intervention
1	Design of colored cards to indicate patients at risk for pressure ulcer
2	Use of intermittent inflation mattress
3	Use of cushions for position changing
4	Placement of evaluation form at patients' bedside
5	Training of all caregivers according to guidelines
6	Intervening in the choice of material used for clothing and bedding and changing non-absorbable fabric to high quality cotton types
7	Finding appropriate placements as soon as possible for intubated patients in the internal emergency ward
8	Increasing medical documenting personnel in attempt to decrease the time used by nurses for documentation
9	Necessitating nutrition consultation for ICU patients
10	Necessitating all clinical wards to report all grade II or higher pressure ulcer to the hospitals safety unit

Results

The access of patients to the preventive devices was 31% before the study which escalated to 60.3% after the intervention (p=0.001) (Fig. 1).

Evaluation of patients in the first 6 hours of hospitalization was 43.6% prior to intervention in comparison with 55.8% after the intervention (p=0.008). Inspection of vulnerable and high-risk areas of the body was 61.5% which reached to 69% after the intervention (p=0.27). The modification of external pressure was 51.3% before the study which rose to 80.6% (p=0.001) (Fig. 2).

Patients position changing by nurses went from 0% to 44.9% (p=0.001). Implementation of standards of care changed from 76.7% to 84.6% (p=0.17), which did not show a significant difference. The patients' skin friction increased from 75.6% during start the study to 92.3% after the intervention (p=0.001) (Fig. 3).

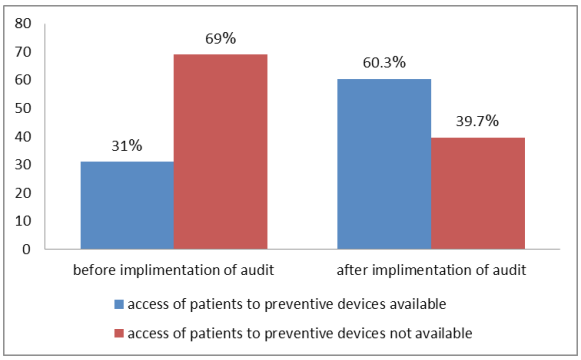

Fig. 1 **Access of patients to preventive devices before and after implementation of audit.**

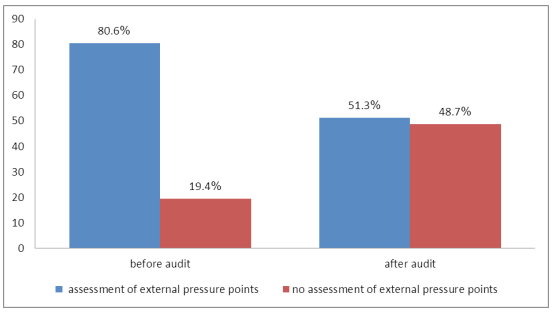

Fig. 2 **Assessment of external pressure points before and after audit.**

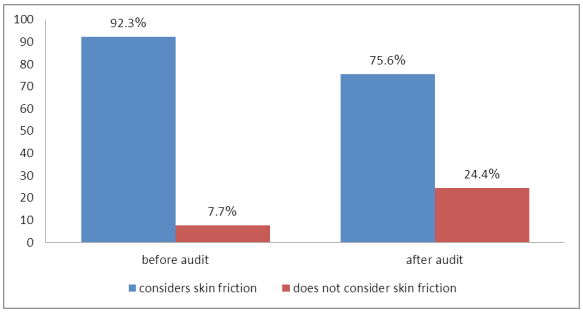

Fig. 3 **Consideration of skin friction before and after audit.**

The use of pressure distributors in patients during surgery went from 0% to 41.6% (p=0.001) (Fig. 4).

Participation of patients in the care process increased from 76% to 93.1% (p=0.001). Recording of the results of assessment and interventions for patients increased from 46.2% to 65.9% post-intervention (p=0.005). Effective monitoring of the treatment and care protocol changed from 46.2% to 54.3% after the intervention which did not show a significant difference (p=0.25).

Discussion

The skin is the largest organ of the body that acts as a deterrent against bacteria, chemicals, and physical actions and maintains body homeostasis. Damage to the epidermis and dermis can lead to systemic infections, increased morbidity, and cost of care, and has negative psychosocial consequences.[8]

Out of 16 variables examined in our study, 8 were increased considerably after intervention. They were including the access of patients to bedsore preventive devices, assessment of external pressure, patients position changing, skin friction, use of pressure distributors, patients' participation in care process, recording of the assessment, and interventions. Our interventions lead to improvement of following items: patients' assessment at the first 6 hours, inspection of vulnerable and high-risk areas of the body, the implementation of standards of care, effective monitoring of the treatment, and care protocol (Fig. 5).

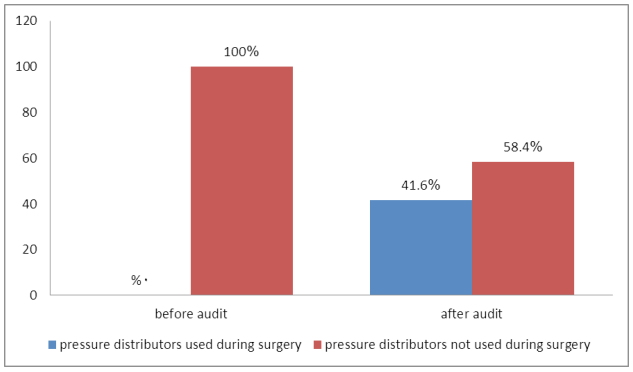

Fig. 4 **The rate of use of pressure distributors during surgery before and after audit.**

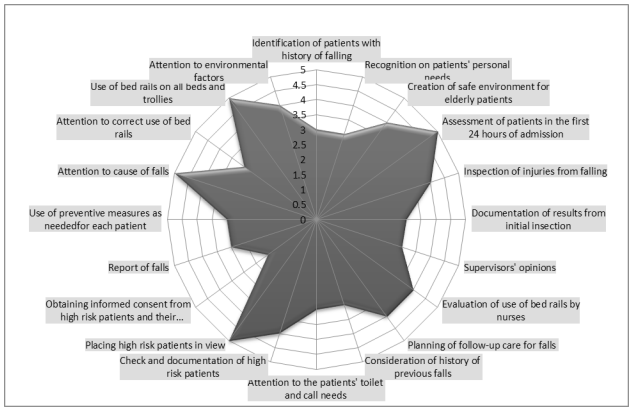

Fig. 5 **Radar chart of studied criteria.**

1. The preparation of guidelines for prevention and treatment of pressure ulcer in hospitalized patients.
2. Preparation of training manuals and pamphlets for the prevention and treatment of pressure ulcer.
3. Participation of hospital managers in improvement of the patients and standards of care.
4. Increasing the nurses' knowledge in the prevention and treatment of pressure ulcer. Other achievements were the stabilization of the audit team to assess consistently high quality patient care and increase the willingness of staff to report patients suffering from pressure ulcer.

Guidelines were updated and attention was increased to the care of the wound bed following a multilevel analysis study of hospitals and nursing homes for the elderly performed in Berlin, Germany between the years 1991 and 2003 in which 522 nurses answered questionnaires in attempt to balance bedsore treatment. The study also showed that nursing knowledge was slightly better in 2003 than in 1991, nurses were more cautious and aware, more knowledgeable of preventive factors, and that the implementation of audit led to higher knowledge.[9]

In a systematic review, nursing training for early detection and recognition of pressure ulcer caused a decrease in the prevalence of this complication from 78.13% to 15.5%, which showed the importance of nurses' knowledge of bedsore prevention.[9]

A survival analysis study by Pusan and colleagues in South Korea conducted on patients in intensive care wards emphasized the importance of regular position changing. The average time needed to cause a bedsore in patients with moderate, high, and very high risk was 5, 3.5, and 3 hours, respectively.[10]

In a clinical trial by Defloor and colleagues on 838 patients in nursing homes, position changing was studied during 4 weeks. It was concluded that position changing every 2 hours with a conventional mattresses compared to position changing every 4 hours with a conventional mattresses significantly reduced the incidence of bedsore.[11]

A study in a Houston Hospital (2009) showed that upgrading the quality of evidence-based nursing practice through training, ongoing monitoring of patients' skin, nurse participation, and sharing of knowledge are advanced monitoring tools for reducing pressure ulcer in rehabilitation wards. Not only will skin monitoring and staff training lead to an increase in the accountability of nurses and documentation development, but it will also improve patients' skin status.[12] All of the above studies emphasize on the proper care, and early identification of high-risk patients. The most important factors in the prevention of pressure ulcer include reducing pressure with changing positions, training of nursing staff, removing moisture and external pressure to the skin, and assessing the nutritional status of patients.

The weaknesses of our study include incomplete data in primary patients' evaluation forms because of admission nurses errors, a shortage of personnel in clinical units, and the misuse of nursing care protocols by some nurses.

Conclusion

The interventions implemented in our study improved care, prevention, and treatment of patients with or at risk for pressure ulcer. It seems that the clinical audit process can lead to improved patient care standards.

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