

The Outcome and Challenges of Application of Pressure Ulcer Prevention Project in King Fahad Hospital Jeddah – 2023

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Received: May 11, 2023 Accepted: June 4, 2023 Online Published: June 14, 2023

doi:10.5539/gjhs.v15n6p18

URL: <https://doi.org/10.5539/gjhs.v15n6p18>

Abstract

Background: A pressure ulcer (PU), also known as bedsore, pressure injury, or decubitus ulcer, is a localized injury brought on by sustained pressure applied to the skin and underlying soft tissue over an extended length of time. This study aimed to identify the outcome and challenges of the application of pressure ulcer prevention project focus to clarify the findings of the application of the project, to highlight the challenges met by the team who apply the project, to know the prevalence state during the application period, and to identify the adherence of nurses to their role. Through Improved nursing education, improve adherence to a policy of pressure ulcer prevention, being sure all equipment is in adequate working condition, Monitoring high-risk patients.

Methodology: This is a retrospective hospital-based study, which monitored the pressure ulcer prevention project's (PUPP) results from 2019 to 2021 for 3 years. Data on 21400 patients were gathered from several departments of a hospital in the west region of Saudi Arabia. The project's main goals were the installation of a wound care team, hospital staff education, ongoing data monitoring, and follow-up visits for inpatient units.

Results: This current study showed that the pressure ulcer prevention project was successful showing a statistically significant reduction of hospital-acquired pressure ulcers (HAPUs) from 1.97% in 2018 to 1.4% in 2019 to 0.53% in 2020 to 0.14% in 2021.

Conclusion: The research concluded the percentage of cases of pressure ulcers was successfully decreased by the PUPP. The project can be expanded and carried out in additional hospitals.

Keywords: pressure ulcer, wound, prevention, skin, Braden scale

1. Introduction

Pressure (bedsores, pressure sores, pressure injuries, decubitus ulcers) (McInnes et al., 2015) are common conditions among patients hospitalized in acute and chronic care facilities and impose a significant burden on patients, their relatives, and caregivers. Being over 70, immobility, paralysis, obesity, urinary and bowel incontinence, medical condition make skin more fragile all this can be a risk factor for pressure ulcer. Nowadays, pressure ulcers are recognized worldwide as one of the five most common causes of harm to patients and preventable patient safety problems. Also increasingly described as an indicator of the quality of care provided by healthcare organizations (Nurhusien et al., 2015).

It is well-recognized that pressure over the skin is play significant role in the development of pressure ulcers. Simplistically, when prolonged perpendicular pressure is applied over a small area, especially a bony prominence, it causes compression of the tissues beneath the skin, disruption to the local blood supply, and ultimately pressure damage (Carol et al., 2015). Long-term diseases that impair blood flow and make the skin more fragile include diabetes, peripheral artery disease, renal failure, heart failure, multiple sclerosis (MS), and Parkinson's disease.

Long-term chronic illnesses might cause decreased motion and losing weight, increasing the risk of PU (Jaul et al., 2018).

Moreover, Pressure ulcer prevention is considered a priority for nurses and all health care professionals and an important indicator of the quality of health care. As a result of this, to achieve the best care for patients, nursing officials should make efforts to improve nurses' knowledge regarding the prevention of pressure ulcers based on the most recent scientific evidence and recommendations. Pressure ulcers are more common in those who are seriously ill, neurologically affected (such as those with spinal cord injuries who have limited motion), or immovable (such as those who are using a prosthesis, body brace, or plaster cast). Other risk factors include a poor diet, being overweight, bad posture, which increases strain on bony prominences, and the use of items that don't adequately relieve pressure, such as beds and chairs. In every hospital department, older patients are especially prone to pressure ulcers (McInnes et al., 2015). In addition, due to the invasive nature of the intensive care unit (ICU), the majority of critically ill patients who are vulnerable populations, are subject to a high risk of Pressure ulcer, in the area with bony prominences, sacrum, coccyx, heels, and ear (Ali et al., 2021).

About 2.5 million individuals acquire Pressure ulcers each year and 60,000 fatalities worldwide occur each year as a result of Pressure ulcers complications such as sepsis, cellulitis, bone and joints infection, abscess, cancer (Biglaril et al., 2014). In the United Kingdom, the estimated prevalence of pressure ulcers is roughly 3.1 per 10,000 people, placing a significant cost on health (Shi et al., 2018), 49-81% across all of Europe in Australia, 3-50% In the Middle East, 7-44.4%, 9.7-51.6% in Africa, and 2.1-31.3% in Asia. Moreover, PU incidence data also differ by medical settings, ranging from 0% to 17% for home care, 0% to 23% for long-term care, and 0% to 6% for rehabilitative care (Tayyib et al., 2016). In Saudi Arabia 84 patients were routinely tested till discharge or death in a prospective cohort study done in two 24-bed ICUs at two referral hospital governmental institutions in 2013, and the incidence of hospital-acquired PU was 39.3% (Hasan, 2017). The high frequency of Pressure ulcers is a reflection of the nursing care provided. As a result, a variety of measures have been employed to reduce Pressure ulcers rates and enhance patient quality of care (Amany et al., 2022).

The economic costs of treatment for Pressure ulcers are significant. The cost of care for one Pressure ulcers is between \$500 and \$70,000, depending on the stage. The American Journal of Surgery calculated that the cost of treatment for a stage IV Hospital acquired pressure ulcer injury of the skin patch's underlying tissues, such as its tendon, joint, or bone, or necrosis (death) (Charlotte et al., 2018) totals \$129 K and the cost of a present-on-admission (POA) Pressure ulcer is \$124 K over an average of four admissions. Several studies on Pressure ulcer cost conclude that cost of prevention is less expensive than the cost of treatment of a pressure ulcer (Cano et al., 2015).

Besides the high cost of Pressure ulcers management in hospitalized patients, it has also a high impact on the medical condition such as (septic arthritis) and bones (osteomyelitis). Both of these illnesses may negatively impact bone, tissue, and cartilage. They might also affect limbs and joints (Colston et al., 2018). Pressure ulcer is considered preventable through the implementation of evidence-based prevention program, International care standards state that risk evaluation, skin and tissue assessment, preventive skin care, repositioning, diet, and the use of supporting materials can all help to prevent PUs (Elina et al., 2022).

Prevention of hospital-acquired pressure ulcers (HAPU) has increasingly become the center focus of healthcare facilities due to many reasons including the impact on reportable hospital performance metrics. Significant reduction of Hospital acquired pressure ulcer (HAPU) such as achieving 0% is very difficult though it is attainable through comprehensive and sustainable preventive measures (Abbas et al., 2019). Hence, this study was done to identify the outcome and challenges of the application of pressure ulcer prevention project.

2. Research Questions

- 1) What is the prevalence rate of a hospital-acquired pressure ulcers?
- 2) What are the findings of application of pressure ulcer prevention project?
- 3) Has this program an effect on reduction of pressure ulcer?
- 4) Which type of challenges the team met?

3. Subjects and Methods

3.1 Design and Setting

A retrospective hospital-based study was conducted in the King Fahad hospital; governmental hospital located at Jeddah state in the west of Saudi Arabia, general hospital included the entire critical care unit (ICU for cardiac surgery, general ICU, Coronary care Unit, burn unit, and Emergency department), medical and surgical units and

dialysis center.

It is comparative value evaluation between pressure ulcer prevalence rate before and after implementation of project, which the prevention project focus on Nursing education, adherence to pressure ulcer prevention policy, provide resources, data monitoring.

3.2 Study Population

The target population of the study was all hospitalized patients who received nursing care in King Fahad Hospital.

3.3 Sampling

Total coverage sampling techniques were used, 21400 patients who achieved the inclusion criteria.

3.4 Inclusion Criteria

Adult male and female admitted to the hospital and have a risk factor to develop a pressure ulcer including immobility, incontinence, Lack of sensory perception, poor nutrition and hydration, medical condition affecting blood flow (Braden scale score more than 18).

3.5 Exclusion Criteria

Patient in outpatient department.

3.6 Sample Size and Technique

All admitted patients during the period of study.

3.7 Data Collection Methods

Data were collected by the researcher from pressure ulcer prevention project chart, it is a patient documentation data to assess the documentation of the Braden scale for all admitted patients, and both the nursing admission assessment and the daily nursing assessment utilized the Braden Scale for Predicting Pressure Sore Risk. All 6 subscales were given 12 scores (sensory perception, moisture, activity, mobility, nutrition, and friction and shear). When the score dropped below 13, the computer automatically consulted the nurse, signaling that the patient was at a high or extremely high risk of getting a pressure ulcer. Additionally assess nursing intervention for high risk patient including regular turning and lifting, skin care, fluid balance, availability of equipment (air mattress, soap, moisture cream) and regular dressing for patient who already have ulcer.

Pressure ulcer prevention project are communicated to all clinical nursing leaders and staff nurses in the hospital through patient pressure ulcer prevention policy and procedure and lectures in the nursing orientation programs, lectures in the nursing continuing education program, and meetings. Clinical rounds regularly to assess and audit compliance with patient pressure prevention policy and procedure. Nurses are encouraged to report newly developed pressure ulcers through the hospital reporting system (Wiqayah). Data from Wiqayah are analyzed by wound management and the newly developed pressure ulcer rate is calculated to stand on the causes. And proved education through Monthly lectures in the coordination of nursing quality, Lectures on nursing department general orientation, Continues observation of the policy adherence and the bedside practice, Observing reporting system, and periodic meetings with the highly-rated area frontline leaders.

3.8 Data Analysis

Descriptive Data were collected from the project chart and files after finished the project, coded, entered, and then analyzed using the statistical package for social sciences (SPSS).

3.10 Ethical Considerations

Permission was taken from the scientific research committee in ministry of health in Jeddah state and the study area's responsible authorities.

4. Results

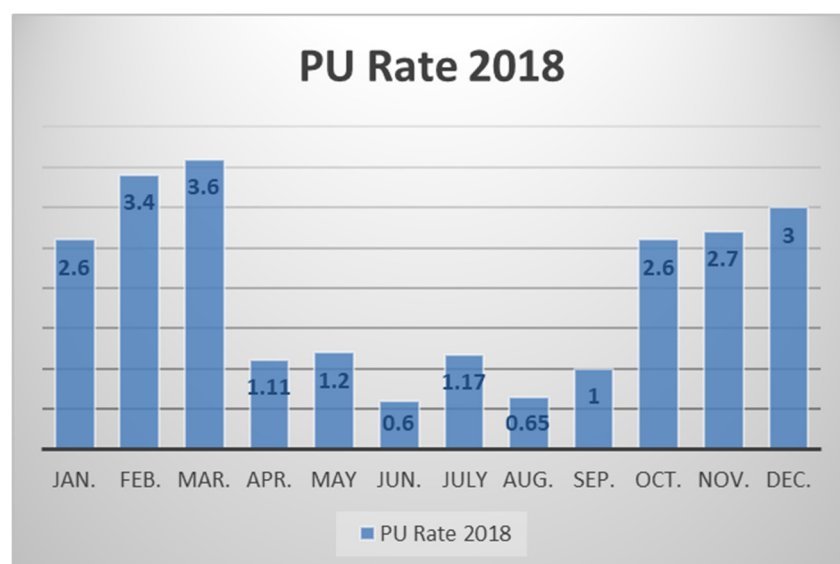


Table 1. Distribution of pressure ulcer rate before implementation of pressure ulcer prevention project; N=21400

Figure 1 showed the prevalence rate of pressure ulcers in the hospital during 2018 and before the implementation of the prevention project was high, starting from 2, 6% in January to 3% in December.

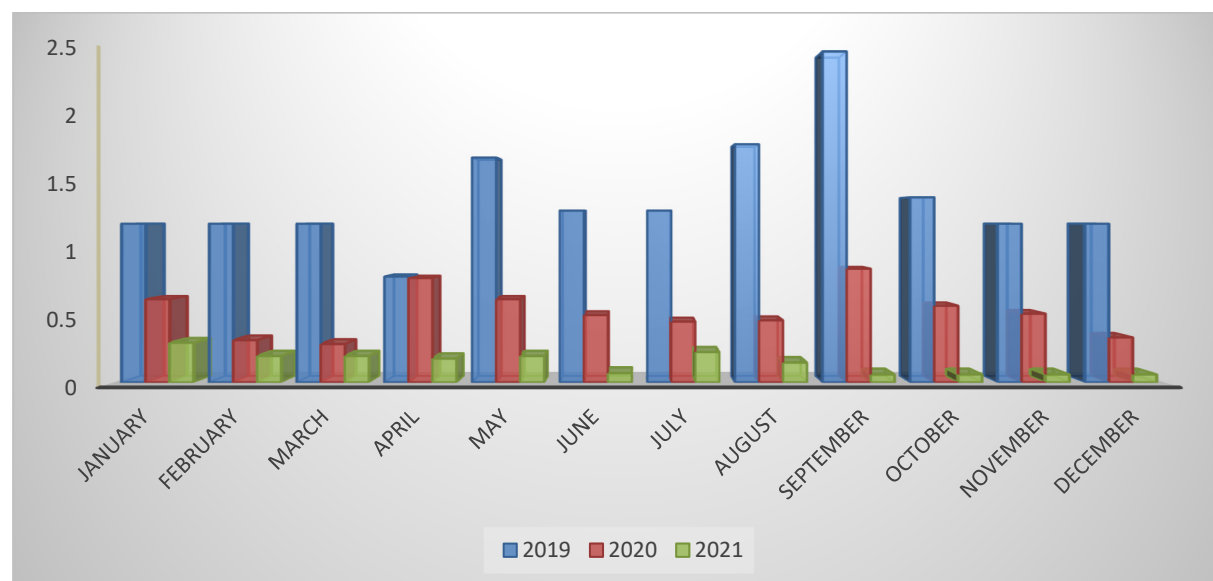


Figure 2. Distribution of pressure ulcer rate after implementation of pressure ulcer prevention project; N=21400

The Figure 2 showed the prevalence rate of pressure ulcers in the hospital during the application of pressure ulcer prevention projects including 2019, 2020, 2021 and showed a reduction in the pressure ulcer rate.

Table 1 showed an exact statistic that determine the incidence rate of pressure ulcers each month during the implementation of pressure ulcers.

Table 1. Distribution of pressure ulcer rate after implementation of pressure ulcer prevention project; N=21400

Distribution Month	2019	2020	2021
January	1.2%	0.63%	0.3%
February	1.2%	0.32%	0.2%
march	1.2%	0.29%	0.2%
April	0.8%	0.79%	0.18%
may	1.7%	0.63%	0.2%
June	1.3%	0.51%	0.07%
July	1.3%	0.46%	0.23%
august	1.8%	0.47%	0.15%
September	2.5%	0.86%	0.06%
October	1.4%	0.58%	0.06%
November	1.2%	0.52%	0.06%
December	1.2%	0.34%	0.06%
Mean score	1.4%	0.53%	0.14%

5. Discussion

A retrospective hospital-based study was used to identify the outcome and challenges of the application of the pressure ulcer prevention project. A serious clinical problem for patients, pressure ulcers cost healthcare facilities a lot of money. According to studies, PUs can be avoided by using the right management and preventative techniques (Floyd et al., 2021). This study presents the outcomes of a four-year quality improvement project that was implemented in a public hospital.

The project including **21400 patients** was created using four components: Improve nursing education, Improve adherence to a policy of pressure ulcer prevention, availability of Equipment, and Monitor high-risk patients, the supporting literature and clinical research served as the foundation for creating this project. After implementing the PU project, the study's findings indicate that the incidence of PU was reduced.

The implemented program focused on three aspects to assess the implementation of best practice guideline recommendations: (i) nurse compliance with the use of a validated pressure ulcer risk assessment and intervention checklist; (ii) accuracy of risk assessment scoring in usual-care nurses and experienced injury prevention nurses; and (iii) use of pressure ulcer prevention strategies (Anna et al., 2012). Another study done by Zainab et al. conclude the prevalence of Hospital acquired pressure ulcer (HAPU) was reduced from 6.63% in 2012 to 2.47. The sensitivity of the Braden scale in predicting a Hospital acquired pressure ulcer (HAPU) was 92.30% and the specificity was 60.04%. Two factors – skin care and Braden scores – significantly predicted the development of a HAPU, according to a logistic multiple regression equation (Mallah et al., 2015).

Utilizing the AHRQ recommendations for pressure ulcer detection and prevention can reduce the occurrence of pressure ulcers, according to additional research. Also internalizing all of these suggestions across the entire health care system may result in a decline in pressure ulcers. (AHRQ, 2023)

An examination of the skin's color to either the surrounding skin or the skin on the other side of the body is part of the assessment process for probable tissue damage. It should be emphasized that grade 3 and 4 pressure ulcers may form without any preceding superficial skin damage in some circumstances because deep tissue injury can sometimes occur before changes on the skin's surface are obvious (Carol et al., 2015). As a result, to estimate the risk of developing PUs, skin assessments using the Braden scale, a valid and reliable instrument, were performed for all patients in addition to the first skin examination performed upon admission. To determine the probability of developing PU, the Braden scale assesses various risk variables, including sensory perception, mobility, activity, diet, friction/shear, and skin hydration. Patients who are at a higher risk should be closely monitored to detect early skin changes.

Reviewing the outcomes of the PUPP implementation, it is clear that the implementation of specified clinical guidelines has increased the patient outcomes due to the reduction in the number of PUs. The Braden scale proved useful for identifying patients who were likely to develop Pressure ulcers.

This research's usage of skin care products and ongoing re-education helped to keep Hospital acquired pressure ulcer (HAPU) rates below the set threshold of 3.1% for 25 straight months, according to a study conducted concurrently by Cano et al. (2015). Similarly study done in Australia by Anna, Following the implementation of an evidence-based prevention program, the prevalence of hospital-acquired pressure ulcers decreased from 20.6 percent (2 years before program implementation) to 12.6 percent (6 years after program implementation).

6. Conclusion

This study has conducted the outcomes of a pressure ulcer prevention project that was established to lower the incidence of Hospital acquired pressure ulcer (HAPUs). Enabling HAPU rates to stay below the desired benchmark of 1.3% for 34 straight months. The program was conducted over a three-year and consists of three main components: the use of evidence-based practices, ongoing monitoring, and nurse education so the program can be extended and implemented in other hospitals

7. Recommendation

Our recommendation is to ensure the sustainability of the prevention project by implementing:

- 1) A continuous educational program, ongoing data monitoring, provision of resources.
- 2) Adherence to hospital policies, and follow-up visits.

Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

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