

Demographic Data of Patients with Pressure Ulcer and Duration taken for Healing in Out of Hospital Care Setting

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Abstract: *The frequency of pressure ulcers among patients living at home or in Transition Care Centers lacks a well-defined standard. To assess the prevalence of this issue, we conducted surveillance from January 2022 to December 2022 at various patient sites and Transition Care Centers within HCAH. Throughout the study, a total of 1,505 patients who received HCAH services participated, and 118 cases of pressure ulcers were identified. Among these patients, 7% presented with grade 4 ulcers, 12% with grade 3, 64% with grade 2, and 17% with grade 1. It is worth noting that a significant proportion of these patients acquired their ulcers either during hospitalization or prior to admission to transition care centers. This study has revealed that 62% of patients were recovered and improved bed sore grade that was present at the time of on boarding. Majority of the patients were of age 60 or above, and with comorbidities. Furthermore, the study indicates that the average time required for recovery varied across different age groups. In the 0-30 age group, the average recovery time was 10 days, while for the 31-40 age group, it was 19 days. The 41-50 age group had an average recovery time of 21 days, the 51-60 age group took 28 days, and the above 60 age group required 30 days for recovery.*

Keywords: Bed sore, Pressure Ulcer, Home care, Transition Care Centre, average recovery time, preventive measures, healing

1. Introduction

Bed sores, also known as pressure ulcers or decubitus ulcers, are localized skin injuries that occur when soft tissue is compressed between a bony prominence and an external surface for an extended period. These ulcers can range from mild to severe and are classified into four degrees. The prolonged compression leads to decreased blood flow, resulting in ischemia, cell death, and tissue necrosis. Capillaries become compressed, restricting the normal flow of blood to the affected area (C. H. Lyder and E. A. Ayello et al. 2008) (S. C. Smeltzer, et al)^{1,2}

It occurs when there is damage to the cutaneous tissues, leading to the progressive destruction and necrosis of the underlying soft tissues. This process is slow and often accompanied by pain. Certain positions of patients can increase the likelihood of pressure ulcers developing on bony prominences, such as the sacrum, shoulders, occiput (back of the head), earlobes, elbows, and trochanters (hip regions). These areas are particularly vulnerable to sustained pressure and friction, making them more prone to the formation of pressure ulcers. (Stockholm, Sweden, 2009) (J. Kottner, et al 2009)^{3,4}

Pressure ulcers typically occur when the skin is subjected to prolonged periods of pressure, which is the primary cause of these ulcers. In addition to pressure, various physical factors

can contribute to skin damage, including friction on the skin surface, shearing forces that displace the skin laterally (where the different layers of skin have varying firmness), as well as excess moisture and inadequate nutrition. Another significant risk factor for pressure ulcers is a lack of sensory perception, often seen in individuals with impaired consciousness. Patients who are immobile and unable to sense discomfort are particularly susceptible to developing pressure ulcers since they are unaware of the need to change positions and alleviate pressure on vulnerable areas of their bodies. (J. Anders, A. Heinemann et al) (P. Lowthian, et al) (B. M. Bates-Jensen, et al)^{5,6,7}

The findings from various studies suggest that the number of nurses available and the amount of time spent at the bedside can have a direct impact on the development of pressure ulcers. Adequate staffing and sufficient time spent with patients can contribute to better prevention and management of pressure ulcers. Additionally, it has been observed that frequent assessment of patients and implementing effective skin care practices can play a significant role in preventing pressure ulcers. Regular and thorough assessments allow healthcare providers to identify early signs of skin breakdown and take appropriate interventions. Implementing proper skin care protocols, such as keeping the skin clean, moisturized, and protected, can also contribute to reducing the risk of pressure ulcers. These findings highlight the importance of healthcare providers being diligent in their assessments and providing optimal care at the bedside to

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prevent pressure ulcer development and improve patient outcomes. (S. D. Horn et al)⁸

A pressure relieving mattress or changing position of the patient every two hours can help reduce the rate of developing of pressure ulcer since turning patients every 2 hours promotes comfort, reduces pressure, increases circulation, exercises joints, and promote musculature. (C. Iglesias, J et al)⁹

Once PU is developed, the wound healing process can be facilitated by dressing changes, ongoing wound assessment, and proper nutrition. Since a large amount of protein is lost through the wound, high-protein is recommended. Despite the relatively high cost of treatment, implementing a pressure ulcer prevention program remains imperative. As pressure ulcer grades become larger, the cost of the treatment increases, leading to high treatment cost for grade IV of PU. Other recent treatment options like Oxygen therapy (Hyperbaric Oxygen) are available in selected care centers (S. Inui et al) (J. McGuinness) (O. Assadian)^{10, 11, 12}

Pressure sore grading (Grading of Pressure ulcer)

- 1) **Grade 0 Pressure ulcer** has intact Skin with subcutaneous hematoma (area of darkening), area of thickening of skin, area of excoriation or edema (swelling)
- 2) **Grade 1 Pressure ulcer sore:** there is superficial skin layer loss (only the epidermis is affected)
- 3) **Grade 2 Pressure ulcer:** full thickness/deep skin loss (Whole dermis is involved) but the edge is not everted
- 4) **Grade 3 Pressure ulcer** involves full thickness skin loss with cavity formation as far as muscles with wound edge everted
- 5) **Grade 4 Pressure ulcer:** it is a grade 3 pressure sore with involvement of bones and joint cavity (underlying tissues)¹³

Source: <https://www.jotscroll.com/forums/11/posts/129/bed-sores-pressure-decubitus-ulcer-staging-grading-prevention.html>

Bed Sores (Pressure Ulcers, Decubitus ulcers): Staging, Grading, Prevention and Treatment

Pressure ulcer prevention starts with determining what tool to use and how frequently pressure ulcer risk assessments should be conducted. Nurses have found the use of risk assessments tools to help identify patients at high risk due to the number of risk factor identified in the literature. Among healthcare institutions that use pressure ulcer risk assessment tools, the braden scale is the most commonly used, followed by Norton Scale. The Braden Scale is designed for use with adults and consists of 6 subscales: sensory perception, moisture, activity, mobility, nutrition, and friction and shear. (Bergstrom Net al)¹⁴

It is based on the conceptual schema of linking the above clinical situations to the intensity and duration of pressure or tissue tolerance for pressure. (Braden B et al)¹⁵

2. Material & Methods

This is statistical and descriptive study that was conducted at Healthcare at Home India Pvt. Ltd, which included patients enrolled in home care and Transition care Centres.

Only those who have bedsores at the time of onboarding were enrolled. Here in HCAH, clinical staff checks the eligibility of on boarding (i. e no dypnea, SpO₂> 90-94% on room air, Resp Rate≤24/min) and take the consent/undertaking on mail.

The nursing assessment tool captured the following key data points:

- Population tally such as age, gender, living with carer or not.
- Preventive measures: the use and waiting time of pressure distributing devices.
- Evidence of pressure ulcer, including anatomical location and severity by skin Inspection
- The source of pressure ulcer: acquired during hospitalisation, developed in the community prior to the home care or transition care and developed during home care and transition care.
- If patients have received any education on pressure ulcers (Trainings)
- Documentation of risk assessment (Braden Score)
- Staging of pressure ulcers by uploading picture in Electronic Medical record at time of on boarding (Asimus M et al)¹⁶

Evidences:

The clinical staff, in collaboration with the clinicians, plays a crucial role in the management of pressure ulcers. Several practices have shown significant improvements in the grades of pressure ulcers, transitioning from a worsening condition to the healing of the wound. Here are some of the key practices:

- 1) **Pressure relief:** The first step is to relieve pressure from the wound site. For bedridden patients, this involves regularly repositioning them to offload pressure. If necessary, padding the area of the pressure ulcer may be implemented, and some patients may require specialty beds that utilize air to shift pressure points. It's important to continue repositioning even with these specialized beds. Wheelchair-bound patients may also need mobility restrictions to promote healing, and their wheelchairs should be evaluated for proper fit.
- 2) **Infection control measures:** Adequate infection control is essential in the management of pressure ulcers. During the initial evaluation, it is important to determine if there is evidence of untreated infection. Proper wound dressing techniques and measures are implemented based on the condition of the wound. Assessing pressure points and wound condition upon on boarding is crucial.
- 3) **Wound dressing and topical agents:** The choice of wound dressings depends on the specific characteristics of the wound being treated. Factors considered include size, depth, shape, and location of the wound, presence of exudates, tunnelling, tissue undermining, type of

tissue in the wound bed, and condition of the surrounding skin. It's important to protect the skin around the ulcer from excessive moisture and friction to prevent further breakdown. Dressings should be changed regularly and promptly when soiled with urine or faeces to prevent wound contamination. Each dressing change should be accompanied by a thorough wound reassessment, and sterile techniques, such as

Aseptic Non-Touch Technique (ANTT), should be used during dressing changes.

By implementing these practices, healthcare providers aim to improve the healing process and prevent further complications associated with pressure ulcers.

Dressings available for pressure ulcer management with advantages, disadvantages, and ideal use

Type of Dressing	Advantages	Disadvantages	Ideal Wound
Mupirocin dressings	Mild antibiotic	inexpensive	Infected wounds
Paraffin Gauze dressings	Inexpensive, microdebridement	Frequent changes	Large complex wounds with exudate or biofilm
Phenytoin dressings	Reduces inflammation	inexpensive	Grade II with mild infection
Hydrocolloid dressings	Absorbent	Expensive	Wounds with minimal discharge, grade II and III
Hydrogel dressings	Hydrating	Moves easily	Dry or dehydrated wounds, uninfected granulating wounds
Silvermesh dressings	Contour and conform to irregular surfaces of wound bed	Prevents epithelialisation	Infected wounds, remove once infection is cleared

Population and sample

To ensure a representative sample of patients from various regions, a total of 1, 505 patients were included in the survey. The sample size was determined based on the proportional distribution of patients in each community site. To select the participants, a random sampling method was employed using an electronic community patient database.

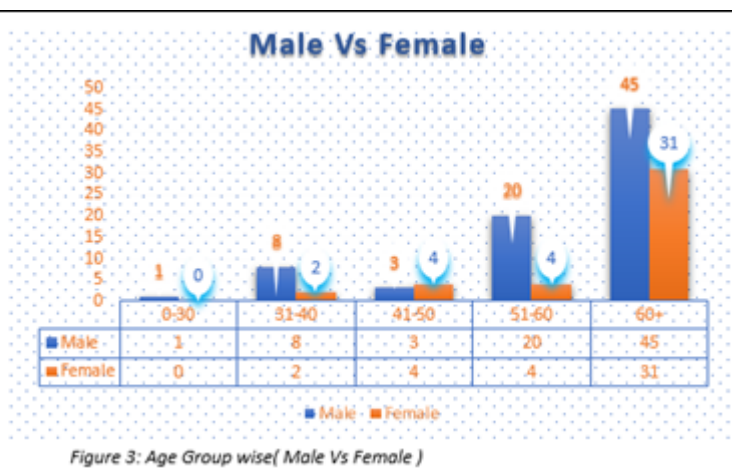
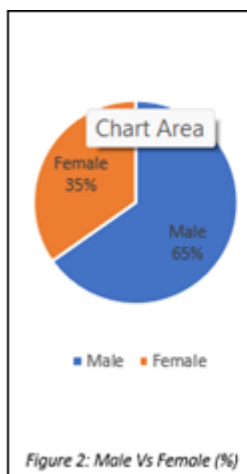
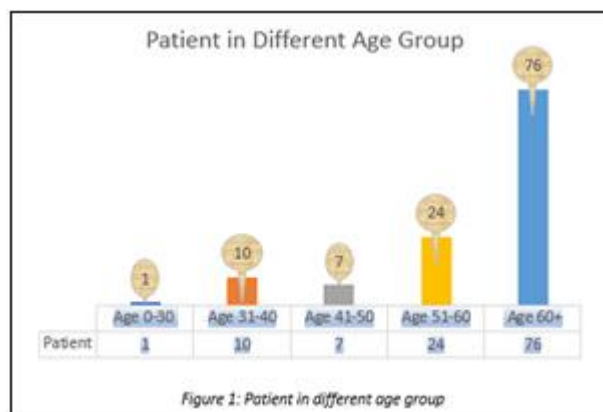
The inclusion criteria for the study were community patients who were currently receiving nursing services at home or in Transition Care Centers (TCC) and provided their consent. Patients listed in the health database and who had spent less than 10 days or more than 100 days in our system were excluded. Additionally, patients who were solely receiving consultations from a dietician or physiotherapist were also excluded from the study.

3. Results and Discussion

Participation rate

Demographics and participation rate

A total of 1505 patients living at home and in TCCs, out of which 118 were on boarded with pressure ulcers.



As shown in Figure, subjects (male-77, female-41). It has been observed that 76 (64.0%) of the patients were of the age 60 and above, and amongst the selected population size

85.5% were living with a carer and majority of the population i.e. 69.49% has pressure ulcer on sacrum region.

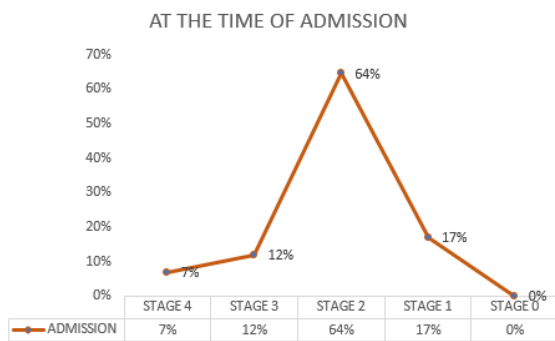


Figure 4: Pressure Ulcer stage at the time of admission

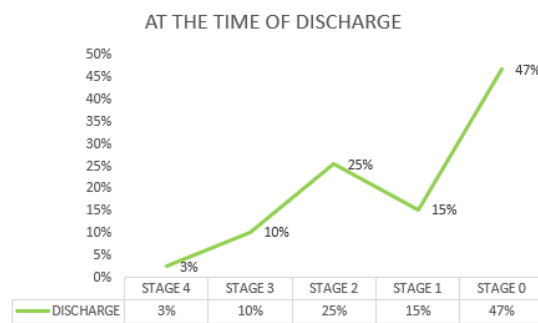


Figure 5: Pressure Ulcer stage at the time of discharge

In the study, a total of 1505 patients were evaluated and 118 cases of pressure ulcers were identified among them. Among the patients with pressure ulcers, 7% presented with grade 4 ulcers, 12% with grade 3, 64% with grade 2, and 17% with grade 1. It is important to note that these proportions

represent patients who acquired their ulcers either during hospitalization or before being admitted to HCAH services. Among the total of 118 patients, 99 were from Transition Care Centre, and while 19 were from homecare services.

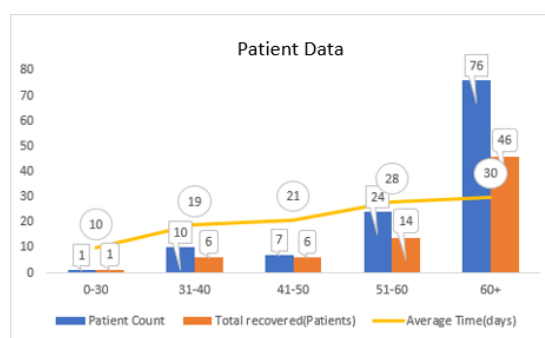


Figure 6: Patient data-Recovered patients with average healing time(days)

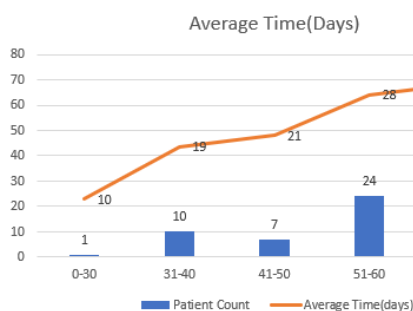


Figure 7: Average healing time in different age groups

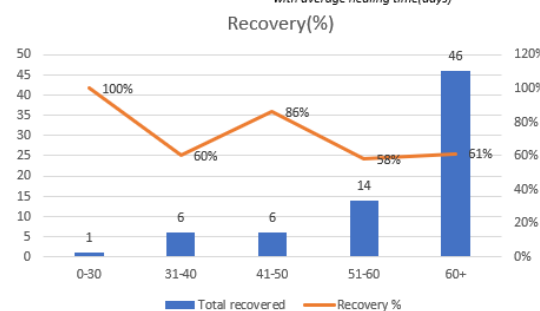


Figure 8: Recovery % in different age groups

During the on boarding process from the hospital to our services, we captured pictures of pressure ulcers in the HCAH Patient Care System. We also conducted a risk assessment for each patient at the time of on boarding, which is available in the Patient Care System. Additionally, training on pressure ulcer management was provided to each patient.

Based on the data analyzed, the study found that the average time for recovery varied across different age groups. The recovery period was estimated to be 10 days for the 0-30 age group, 19 days for the 31-40 age group, 21 days for the 41-50 age group, 28 days for the 51-60 age group, and 30 days for the above 60 age group.

One of the significant issues identified in this study is the need for action to improve the speed and access to pressure redistributing devices. It was found that 37.28% of patients with pressure ulcers did not have these devices, highlighting

the importance of addressing this gap and ensuring their availability for effective ulcer management.

4. Discussion

The findings of this study align with previous research, which has consistently shown that men are more susceptible to pressure ulcers than women. Additionally, patients with high-risk diseases have a higher likelihood of developing pressure ulcers. Notably, the present study revealed a 100% recovery rate in the 0-30 age group, while the lowest recovery rate was observed in the 51-60 age group, likely due to the higher burden of complex cases in that demographic group.

The study identified several factors that contribute to patients remaining at the same grade of pressure ulcer development, including age, nutritional needs, and the patient's underlying disease condition. Both patients and healthcare workers have shown a positive response to home

care and Transition Care Centers, particularly for low-risk individuals and families with elderly patients.

However, it's important to acknowledge the limitations of this study, such as the relatively small sample size. Future research should aim to explore the relationship between specific diagnoses and the anatomical location of pressure ulcers to further enhance our understanding of this condition.

5. Conclusion

This study highlights the demographic characteristics of patients with pressure ulcers and the duration required for their healing. The majority of patients, particularly those aged 60 and above with high-risk diseases, showed recovery and downgrading of pressure ulcers. Future research should explore the relationship between diagnosis and anatomical location of pressure ulcers.

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