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Original Article

Pressure Ulcers in Covid-19 Patients

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ABSTRACT

Background: Pressure ulcers are considered as one of the top five preventable patient safety problems in hospitals. Pressure ulcers are increasingly emerging among hospitalized patients including the COVID-19 patients. The aim of this study was to investigate the frequency of pressure ulcers in COVID-19 patients.

Methods: This was a retrospective study conducted at a tertiary care hospital. Data were collected on patient demographics, department, site of pressure ulcer, stage of pressure ulcer and length of stay at the hospital. All patients who acquired pressure ulcers during their stay at the hospital from 1st July 2020 to 30th June 2021 were included in the study.

Results: 32 patients were documented to have acquired Pressure Ulcers during their stay at the hospital. 21 (65.6%) of the patients were males and 11 (34.4%) were females. Most Pressure Ulcers were present in adults aged 51 to 70 years. Almost half of the cases were of Grade 1 and 2 Pressure Ulcers while the most common sites were Sacrum and Gluteal region.

Conclusion: Patients suffering from COVID-19 as well as their families go through a lot and Pressure Ulcers, which are easily preventable, add to their misery. The concerned patient safety authorities should provide awareness and training to focus on the prevention and early detection of Pressure Ulcers to reduce or entirely eradicate the risk of complications.

Key words: Prevalence, Pressure ulcer, COVID-19, Retrospective study, Patient Safety, Pakistan

Introduction

A Pressure ulcer (PU) can be defined as an ischemia, dead cell and tissue necrosis caused by circulatory disorder for prolonged periods usually over a bony prominence as a result of pressure. PU more frequently occur in the sacral region, at the occiput, ischial tuberosities, trochanters, lateral malleoli, heels and rarely the popliteal fossa.[1,2,3] These days, among COVID-19 patients who are being treated in prone position, facial ulcers are also being reported.[4,5]

These are skin lesions that bring pain, are associated with risk of serious infections, and increased health care services. They are common among patients hospitalized in acute and chronic care facilities and impose a significant burden on patients, their relatives and caregivers.[6]

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Patients with PU are not only deprived of their physical health but also suffer such psychological problems as the distressed feeling of social isolation and loss of independence.[7]

Although life expectancy has been extended by the improvement in the care and rehabilitation services, the number of bed and chair bound people has also augmented, which has caused an increase in the rate of Hospital Acquired Pressure Ulcers (HAPUs) or Hospital Acquired Pressure Injuries (HAPIs) as they are referred to in the west.[8] Nowadays, among the five most common causes of harm to patients and preventable patient safety problems worldwide, HAPUs are recognized as one. Also, the occurrence of HAPUs has increasingly been described as an important indicator of the quality of patient care provided by health facilities, most mentioned of which are nursing homes and intensive care units. [9,10]

HAPUs are a significant health problem that increase the risk for morbidity and mortality, prolong the hospital stay and augment treatment costs which may drastically increase if the patient is already being treated for COVID-19.[7] International studies show that

the cost of treating a PU varies from £1000 (grade 1) to £14,000 (grade 4). The costs are higher for advanced stages of ulcers because they take longer to heal and there is a higher risk of complications. [11,12]

With COVID 19 causing havoc around the world, it is essential that we consider every factor that can adversely affect patients and their families which is why this study was designed to determine the prevalence of Hospital Acquired Pressure Ulcers among COVID-19 patients since, among other conditions, they are at risk of developing PUs due to their limited or altogether absent mobility. To the best of the authors' knowledge no such study has been previously conducted in the country.

The purpose of this study is to determine the incidence of Hospital Acquired Pressure Ulcers (HAPUs) in a tertiary care hospital in patients with COVID-19.

Methodology

A retrospective, descriptive study was conducted at Northwest General Hospital and Research Centre (NWGH & RC) and Northwest Teaching Hospital (NWTH) in Peshawar, Pakistan in July 2021. Both the facilities are tertiary care hospitals operating under the umbrella organisation Alliance Healthcare.

Ethical Consideration:

Before data collection, permission was taken from the Institution Research and Ethics Board of Northwest School of Medicine (NWSM) and Northwest General Hospital and Research Center (NWGH & RC). The proposal for the project is registered with approval ID IREB/EAC/04. Data of the patients was only shared with the co-authors and treated as confidential at all times during the study.

Criteria for Inclusion and Exclusion:

Patients who were reported to have acquired pressure ulcers while staying at the facilities in the past one year i.e. from 1st July 2020 to 30th June 2021, were included in the study. Those patients whose records or primary attending's or nursing notes were incomplete were excluded from the study.

Data Collection and Analysis:

The patients' records were accessed from the combined Management and Information Section (MIS) of both the facilities. The database was searched for the keywords "bed sore, pressure sore, and pressure ulcer" in nursing and the primary attendings' notes. Data were collected on patient demographics, department of admission, body mass index, level of mobility, site and stage of Pressure Ulcer and length of stay at the hospital. Stages of Pressure ulcers were based on the classification promulgated by the National Pressure Ulcer Advisory Panel (NPUAP) in 2007. The data obtained in HTML format from the facilities' database was converted to Microsoft Excel, then exported to SPSS version 21 (IBM Corp. NY, USA) and analysed.

Results

A total of 779 patients with a diagnosis of COVID 19 were admitted to NWGH and NWTH, Peshawar from 1st July 2020 to 30th June 2021. The number of entries identified as a result of the keyword search of the database were 48. After a thorough analysis and scrutiny of the patients' records and removal of duplicate and incomplete entries, 32 (4.1%) patients were confirmed to have met the inclusion criteria. Out of the total included cases, 21 (65.6%) were males and 11 (34.4%) were females. The minimum age was 30 while the maximum age was 92 with a mean of 61.29 ±5.301 years (SD 15.058). (Table 1)

The occurrence of PU increased steadily with the increase in age. The least number of PUs being present in younger adults of age less than 30 years while the most present in adults of age between 51 and 70 years. (Table 1)

Table 1. Demographic Data of Patients (*N*=32)

Detail	N (%)
Gender	
Male	21 (65.6)
Female	11 (34.4)
Age	
<30 years	1 (3)
30-50 years	7 (22.6)
51-70 years	13 (41.9)
>70 years	11 (34.3)

The most common grades of PU detected were Grade 1 and Grade 2, both of which were 43.8% of the total. On the other hand, Grade 3 PU were fairly less in number accounting for only 12.5% of the total while no cases of Grade 4 PU were reported. (Table 2)

Out of the 6 anatomical locations of PU reported, Sacrum was the most predominant site closely followed by the Gluteal region with a mere difference of 3% in their prevalence. Heels and Ischium were locations more frequently reported than Elbows and Scapular regions which were the least reported. (Table 2)

Table 2. Characteristic of Pressure Ulcers (*N*=32)

Detail	N (%)
Pressure Ulcers per patient	
Single	26 (81.2)
Multiple	6 (18.7)
Grade	
Grade 1	14 (43.8)
Grade 2	14 (43.8)
Grade 3	4 (12.5)
Grade 4	0 (0)
Anatomical Location	
Sacrum	11 (35.5)
Gluteal	10 (32.3)
Heels	3 (9.7)
Elbows	2 (6.5)
Ischium	3 (9.7)
Scapular	2 (6.5)

The minimum stay at the hospital was 4 days while the maximum was 147 days with a mean of 23.02 ±9.364 days (S.D 25.753). Most of the reported cases occurred during the stay period of 10 to 20 days. No significant pattern was found relating the stay at the hospital to the case of PU reported. (Table 3)

Table 3. Length of stay of at the facility (*N*=32)

Detail	N (%)
<10 Days	7 (22.6)
10-20 Days	12 (38.7)
21-40 Days	9 (29.0)
>40 Days	3 (9.7)

Discussion

This study on the incidence of Hospital Acquired Pressure Ulcers (HAPUs) in COVID-19 patients shows that the overall frequency of PUs was 4.1 % in the last 1 year i.e. 1st July 2020 to 30th June 2021. Two thirds of the patients were males while one third were females. This is in accordance with a longitudinal study on the risk factors of PU which lists the male gender as one of the significant risk factors of PU incidence.[13]

The mean age of the patients in this study was 61.29 years (SD 15.058). Looking at the incidence of HAPUs it was noted that with the increase in age of the patients the number of HAPUs also increased steadily. This finding is consistent with studies previously conducted to check solely the relation of old age and PU prevalence.[14-16] On the contrary, the number of patients of age less than 30 were the least reported of all the age groups since they are more likely to be ambulatory during their stay at the hospital and can change their position more often than older patients.

This study revealed that the most common grades of PUs documented were Grade 1 and Grade 2 which were equally reported while Grade 3 PUs were less than half of each of them. These results may be attributed to the fact that early detection of skin changes due to PU leads to them being treated and not being converted to the more severe Grade 4. Literature review shows varying results regarding stages of PUs in different parts of the world. For instance, a study on the incidence of HAPUs conducted by Jiang Q et al in China documented Grade 1 and 2 as the most common while another one by Arsh et al at the Praplegic Center, Peshawar reported more than half of the patients with Grade 4 PUs.[3,17]

The least common of the cases reported were at the anatomical locations, scapular and elbows. Patients with little mobility tend to move their upper body more often than their lower limbs which may explain the high number of reported cases of PUs at the sacrum and gluteal regions of the body. A longitudinal study on patients from 78 nursing homes by Brandeis et al lists ambulation difficulty as the most dominant risk factor for PUs followed by faecal incontinence, diabetes mellitus and difficulty feeding oneself.[13,18]

It was noted that the minimum number of days stayed at the hospital was 4 which shows that PU were associated with longer stays which increase the risk of prolonged durations of immobility which is in accordance with studies conducted on risk factors of PU[19,20], however no specific pattern was discernible between number of days and incidence of PU in this study. The incidence is higher in the 10 to 20 days stay category which raises numerous questions for prospective studies such as why this period of stay has higher reported cases of PU? Or if the concerned care and management personnel give less attention to those with shorter stays?

COVID-19 has now been prevalent for more than a year now yet no studies have been conducted on the occurrence of PU in its patients. This study will serve as a foundation for prospective studies and on other topics such as hospital acquired conditions' prevalence and their prevention in COVID-19 patients.

Conclusion

COVID-19 patients are susceptible to pressure ulcers if not properly cared for. Old age and longer durations of stay at the hospital amplify this risk, however prospective studies need to be conducted in

collaboration with other hospitals and on a larger scale to determine the prevalence of PU in COVID 19 patients since none have been conducted so far to the best of the authors knowledge. Patients suffering from COVID-19 as well as their families go through a lot and PU, which are easily preventable, add to their misery. The concerned patient safety authorities should provide awareness and training to focus on the prevention and early detection of PU to reduce or entirely eradicate the risk of complications.

Conflict of Interest: Authors declare no conflict of interest.
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C. Interpretation/ Analysis and Discussion

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