Jurnal Ilmiah Mahasiswa Kedokteran Universitas Airlangga

JUXTA: Jurnal Ilmiah Mahasiswa Kedokteran Universitas Airlangga
2022 August, XIII (02)

ORIGINAL ARTICLE

Decubitus Ulcer Patients Profile in Department of Plastic Surgery Dr. Soetomo General Hospital, Surabaya from January to December 2018

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A B S T R A C T

Introduction: Continuous pressure on the area of the skin, especially in areas with bone protrusion can cause decubitus ulcers. Decubitus ulcers can occur to anyone, both children and adults, male or female, especially in people who experience daily immobility in a bed or wheelchair. Many treatments are performed in order to prevent decubitus ulcers to not becoming a more dangerous condition. This study aimed to determine the profile of pressure ulcers in Dr. Soetomo General Hospital Surabaya.

Methods: This was a cross-sectional descriptive retrospective study. Secondary data were collected from 25 medical records of pressure ulcer patients in the Outpatient Clinic Department of Plastic Surgery Dr. Soetomo General Hospital Surabaya from January to December 2018. The data such as age, gender, risk factors, comorbidities history, and management were taken. The calculation was performed using Microsoft Excel.

Results: The majority of patients with pressure sores at the Outpatient Clinic Department of Plastic Surgery Dr. Soetomo General Hospital Surabaya from January to December 2018 were dominated by female patients aged 46-65 years old (24%), with the most common risk factor being immobilization (96%). Patients' history showed that most patients with decubitus ulcers suffered from a weakness in the limbs (13%). The most common treatment was wound bed preparation (46%) and education (46%).

Conclusion: Pressure ulcers most often occurred in women aged 41-65 years or the elderly. Most patients experienced immobilization as a risk factor for pressure ulcers. These patients were dominated by those who had a history of illness with limb weakness. The therapy applied to patients with pressure sores was the preparation of wound beds and education to the patient.

A R T I C L E I N F O

Article history:

Received 31 August 2020

Received in revised form
14 December 2021

Accepted 15 July 2022

Available online 10 August 2022

Keywords:
Comorbidities,
Decubitus ulcers,
Human & health,
Management,
Risk factors.

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JUXTA: Jurnal Ilmiah Mahasiswa Kedokteran Universitas Airlangga
p-ISSN: 1907-3623; e-ISSN: 2684-9453
DOI: 10.20473/juxta.V13I22022.46-50

Introduction

Decubitus ulcers or commonly called pressure sores are skin and underlying tissue trauma because of constant pressure on the skin for a long time, causing ischemia in the skin area. When the pressure is not gotten rid of immediately, the supply of nutrients and oxygen to the surrounding tissue will stop, and the tissue will die or causes necrosis.[1] Decubitus ulcers can happen to anyone, both children and adults, as well as men or women.

The incidence of decubitus ulcers in the world is increasing with time. The global death rate of pressure ulcer sufferers in 187 countries from 1990 to 2010 has increased by 32.5%.[2] In Indonesia, the incidence of decubitus ulcers reaches 33.3%. According to the Association of Southeast Asian Nations, this number is higher than in other countries.[3]

According to the European Pressure Ulcer Advisory Panel, the severity of decubitus ulcers is divided into 4 stages. Stage 1 affects the superficial part of the skin that has features of non-branch-able erythema of intact skin. In stage 2, the injury has reached the dermis, and some parts of the superficial skin layer have disappeared. Whereas in stages 3 and 4, all of the skin surfaces have disappeared, stage 4 is accompanied by loss of soft tissue because of necrosis. In this stage, the injury has reached the fascia.[1] Meanwhile, the National Pressure Ulcer Advisory Panel[4] stated that the severity of decubitus ulcers is divided into 6 stages with the first until fourth stages having the same signs as the previously mentioned stages. The other stages are unstageable and deep tissue injury. Unstageable indicates the loss of skin and tissue that cannot be determined because of the presence of slough or eschar.

The causes of decubitus ulcers are divided into 2, extrinsic and intrinsic. Extrinsic causative factors consist of prolonged pressure, shear forces, friction, humidity levels, and postural abnormalities. Meanwhile, intrinsic causes include altered level of consciousness, loss or decreased sensation in the skin, nutritional factors, anemia, edema, atherosclerosis, age, acute illness, sleep, medication, cardiovascular changes, stress, and smoking.[5]

Decubitus ulcers is a disease that needs a lot of money, time, and energy to manage.[1] Therefore, giving the right treatment is needed in order to prevent ulcers to not becoming a more dangerous condition. An example of wound management is wound bed preparation. This method consists of 3 main problems that usually appear, but it depends on the viability of the tissue. Debridement to remove necrotic tissue or slough, using antibiotics to control bacteria to prevent infection, and exudate management with dressings to make the wound moist.[6]

Decubitus ulcers is a problem that must be taken care of seriously. This study aimed to determine the profile of decubitus ulcers in patients treated in Department of Plastic Surgery Dr. Soetomo General Hospital Surabaya from January 2018 to December 2018. Hopefully, this study can help prevent and reduce the incidence of pressure ulcers.

Methods

This was a cross-sectional descriptive retrospective study. The instrument used secondary data that were collected from medical records.

The independent variables in this study included age, gender, risk factors for the patient, history of the patient's comorbidity, and management in Department of Plastic Surgery. Meanwhile, the dependent variable was patients with pressure ulcers in Dr. Soetomo General Hospital Surabaya from January until December 2018.

This study used a total sampling technique from decubitus ulcer patients who were treated by Department of Plastic Surgery Dr. Soetomo General Hospital Surabaya from January to December 2018. The sample was calculated according to the inclusion and exclusion criteria. The inclusion criteria were complete data on the medical records of patients with complaints of pressure ulcers at the Outpatient Clinic Department of Plastic Surgery Dr. Soetomo General Hospital Surabaya. Meanwhile, the sample exclusion criteria were incomplete patient medical records. The samples were processed and analyzed using Microsoft Excel 2016.

Results

General Characteristics of Decubitus Ulcer Patients

From 28 patients with pressure ulcers, 25 patients were included in inclusion criteria and the other 3 patients were excluded. The majority of patients with decubitus ulcers at the Outpatient Clinic Department of Plastic Surgery Dr. Soetomo General Hospital Surabaya from January to December 2018 were dominated by female patients aged 46-65 years old (6 patients, 24%), followed by male patients aged under 5 years old (4 patients, 16%), and male patients aged 46-65 years old (4 patients, 16%) (Table 1).

Table 1. Prevalence of decubitus ulcers by age and gender

Gender / Age	Male	Female
Under 5 years old	4	1
5 to 11 years old	0	0
12 to 25 years old	2	1
26 to 45 years old	3	1
46 to 65 years old	4	6
Over 65 years old	1	2

Source: Research data, processed

Risk Factors of Decubitus Ulcer Patients

Risk factors are the conditions when the patient is more susceptive to diseases such as decubitus ulcers. According to the data obtained, the highest risk factor of developing decubitus ulcers at the Outpatient Clinic

Department of Plastic Surgery Dr. Soetomo General Hospital Surabaya in 2018 were patients with immobilization (24 patients, 96%) (Table 2).

Table 2. Risk factors of decubitus ulcer

Variable		Number of Patients	Percentage
Risk Factors	Immobilization	24	96%
	Geriatric state	1	4%

Source: Research data, processed

Comorbidities History of Decubitus Ulcer Patients

In patients with decubitus ulcers, comorbidities may be the cause of the pressure ulcer. The most history of comorbidities patients at the Outpatient Clinic Department of Plastic Surgery Dr. Soetomo General Hospital Surabaya in 2018 were limb weakness (7 patients, 14%) and limb paralysis (4 patients, 8%), but some of the data obtained were not clear which parts of the body experienced weakness and paralysis (Table 3).

Table 3. Comorbidities history

Variable		Number of Patients
Comorbidities History*	Cerebral palsy	1
	Neuromuscular dysfunction of bladder	1
	Limb weakness	7
	Tracheostomy state	2
	Limb paralysis	4
	Subdural empyema	1
	Hypoalbuminemia	2
	Sepsis	1
	Urinary Tract Infection	2
	Post Guillain Barre Syndrome	1
	Wilson's disease	1
	Multiple congenital anomaly	1
	Fracture	2
	Crouzon syndrome	2
	Hydrocephalus	2
	Spinal cord injury	1
	Chronic Kidney Disease	2
	Polio	1
	Anemia	1
	Epidural Haemorrhage	1
	Pneumonia	2
	Global Development Delay	1
	Foot ulcers	1
	Pulmonary Tuberculosis	1
	Glioblastoma in cerebrum	1
	Post AV shunt surgery	1
	Severe Traumatic Brain Injury	1
	Subdural Haemorrhage	1
	Acute Coronary Syndrome	1
	Diabetes Mellitus type I	1
	Loss of consciousness	2
	HELLP Syndrome	1

*** :** several patients had more than one comorbidity

Source: Research data, processed

Management of Decubitus Ulcer Patients

Managements performed for patients with decubitus ulcers at the Outpatient Clinic Department of Plastic Surgery Dr. Soetomo General Hospital Surabaya in 2018 were wound bed preparation and education. Other management was closing the defect, such as skin graft or flap (4 of 25 patients) (Table 4).

Table 4. Management performed

Variable		Number of Patients
Management*	Wound bed preparation**	25
	Education***	25
	Surgical reconstruction****	4

*** :** several patients had more than one management
** **:** consist of physical examination, debridement, exudate management, and infection control
*** **:** consist of position change and anti-decubitus mattress
****** :** consist of flap and skin graft

Source: Research data, processed

Discussion

From 25 data of inclusion criteria, it was found that decubitus ulcer patients were dominated by women aged 46–65 years old (6 of 25 patients, 24%). Meanwhile, the second-largest population of decubitus ulcer patients was dominated by men under 5 years old (4 patients, 16%) and men aged 46–65 years old (4 patients, 16%). Similar results were also found by Mutia, Pamungkas, & Anggraini[7] at Arifin Achmad General Hospital Riau in 2011-2013, decubitus ulcer patients were dominated by females aged 46-65 years old. Whereas in another study conducted on infants and children at H. Adam Malik General Hospital Medan, the most patients with pressure ulcers were males aged between 0-5 years old.[8]

Based on the article written by Jaul,[9] it was explained that older adults have a risk of developing various chronic diseases related to the intrinsic risk for decubitus ulcers. Older adults with multiple chronic conditions are more likely to have physical disabilities as well as social isolation. In outpatients, it was found that 1.61% of 75,168 elderly individuals had pressure ulcers. This incidence would increase to 4.2% for patients aged over 85 years old with a Relative Risk of 5.06.

The high incidence rate in women of old age is related to immobilization that happens mostly in women, whereas in men, higher mobility can cause faster healing to occur as

well. Moreover, many bone diseases are caused by age factors, such as osteoporosis or bone loss, that can decrease mobility in a person which are also dominated by female patients. This is due to the process of pregnancy, breastfeeding, and decreased estrogen during pre-menopause, menopause, and post-menopause.[10] Whereas for men, there is no menopause period, but they have an andropause period which has difference with menopause. Andropause can impact bone density such as bone loss like menopause, but andropause in men occurs gradually and influenced by age. Most women experience menopause at 50 years old, while in men it occur about 10-15 years (2 decades) after women experience menopause.[11] Age and gender are multivariable that is considered enough in determining the pressure ulcer development. However, to be the main predictor of decubitus ulcers, it required other factors, such as risk factors or comorbidities history of the patient.

The risk factors of decubitus ulcers patients were quite diverse, but there were only 2 factors that caused pressure ulcers at the Outpatient Clinic Department of Plastic Surgery Dr. Soetomo General Hospital Surabaya. Based on Table 2, risk factors of decubitus ulcers were immobilization and patient with a geriatric state. Immobilization is a condition where a person experiences limitations in physical movement. Bed rest caused by immobilization aims to reduce physical activity and the body's oxygen demand, reduce pain, and to restore strength. Furthermore, immobilization can be due to an injury or illness that requires someone to not do too much activity. Limitation of movement will have several consequences, for example, it is damage to the skin due to circulatory disturbances and nutrient supply to certain areas resulting in ischemia and necrosis of the tissue called pressure ulcers.[12] Kohali[13] stated that decubitus ulcers can happen 2-4 weeks after prolonged bed rest. Geriatric patients are different from elderly patients. Geriatric patients are elderly patients or patients over 60 years old who have more than 1 irrelevant chronic disease or multi pathological.[14]

According to Sulidah and Susilowati,[15] age is an intrinsic factor that causes pressure ulcers. This is related to decreased elasticity and degenerating tissue vascularization in the elderly, thus the risk of developing decubitus ulcers increases. The aging process that happens in elderly patients can decrease muscle elasticity, serum albumin levels, inflammatory response, and also cohesion between the epidermis and dermis. It will be exacerbated by decreasing the physiological abilities of the body in the elderly, such as reduced sensitivity of the skin to pressure and friction, cutaneous and subcutaneous tissue, collagen and elastin tissue, decreased capillary collateral efficiency in the skin, and decreased sensory perception ability in feeling pain due to pressure.

Based on Table 3, patients with decubitus ulcers had many histories. Some of them also had more than 1 comorbidity. Based on the data written in the medical record, there was no clarity about the correlation between diseases. Nevertheless, from these results, it was found that most diseases suffered by patients before they got pressure ulcers were limb weakness and limb paralysis. The results of this study did not differ from the study of Okarianti, Sitorus, and Tsuawabeh,[16] in which the majority of patients have decreased sensory perception, consciousness, and immobilization. This can be due to paralysis in all extremities (quadriplegia) or paralysis of half of the body (hemiplegia). In patients who experience paralysis, sensory loss, or decreased consciousness, it can cause damage to sensory perception or cognition. This is related to the continuous pressure on the skin that bothers blood circulation and the delivery of nutrients to the skin.[17]

From Table 4, it is found that wound bed preparation and education were the most often management performed on decubitus ulcer patients at the Outpatient Clinic Department of Plastic Surgery Dr. Soetomo General Hospital Surabaya. According to Halim, Khoo, and Mat Saad,[18] wound bed preparation is a concept that emphasizes a holistic and systematic approach that is useful for evaluating and removing obstacles to the wound healing process, thus the wound healing process can take place properly. The purpose of doing this wound bed preparation is to optimize and accelerate the endogenous healing process and increase the effectiveness of the therapy that will be received afterward.

Wound bed preparation consists of debridement, infection control, and moisture balance.[19] In addition to the wound bed preparation, education is given to patients or those who care for them. This education can take the form of a change in position every few hours and the use of anti-decubitus mattresses. In several studies, it was stated that changing the position of a patient with pressure ulcers was recommended every 2 - 4 hours. This method can prevent cell necrosis that occur as quickly as in 2 – 4 hours.[20] Another education that can be given is using anti-decubitus mattresses to reduce the amount of pressure and duration of pressure.[21] Examples of specific mattresses that can be used as anti-decubitus mattresses are mattresses filled with air and bubbles that can move up and down and water mattresses that can be adjusted to the temperature.[22]

Management performed on patients with pressure ulcers generally only consists of examining and dressing the wound and educating the patient and the carer. Surgical closure of the wound with a skin graft or flap was not performed in all patients because of several considerations from the wound condition or the general condition or the patient's economic condition. Operative closure of the wound is performed if the wound is large in size, hence it is not possible to close the per secundam with the help of a dressing. At the end of the examination and treatment of pressure ulcer patients, it must be added with some advice or education to the patient or to the people who care for them, thus there is no re-injury or new decubitus ulcer sores occur.

Conclusion

Based on the results, it can be concluded that decubitus ulcer patients at the Outpatient Clinic Department of Plastic Surgery Dr. Soetomo General Hospital Surabaya in 2018 were dominated by females

aged 46 – 65 years old. The most risk factor of pressure ulcer patients was immobilization that could cause prolonged bed rest and constant pressure on the body. Comorbidities history of patients before experiencing pressure ulcers was limb weakness. The management performed was wound bed preparation, such as debridement, bacterial control, or moisture balance, preparation, and providing education to patients, such as changing positions every 2 - 4 hours or using an anti-decubitus mattress.

Acknowledgments

Special thanks to the mentors who gave guidance during the research process. Thanks to the staff of the Research and Development Department and medical record at the Outpatient Clinic Department of Plastic Surgery Dr. Soetomo General Hospital Surabaya.

Conflict of Interest

The authors declared there is no conflict of interest.

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