

## THE CORRELATION OF SERUM ALBUMIN LEVELS AND STAGES OF DECUBITUS IN INPATIENTS AT DR. SOETOMO REGIONAL GENERAL HOSPITAL OF SURABAYA

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### ABSTRACT

**Introduction :** The prevalence of decubitus ulcers in Asia is amounted to 2.7%-16.8%, and in Indonesia, there was a 40% prevalence of decubitus ulcers in 2017. In 2017, the prevalence of decubitus in Bandung was found to be 10.8%. Consequently, the number of active cases and deaths of decubitus ulcers reached 48%. Therefore, efforts to reduce the number of decubitus ulcers are urgently needed, thereby preventing the risk of decubitus severity.

**Objective:** To evaluate the correlation of serum albumin levels and stages of decubitus in inpatients at Dr. Soetomo Regional General Hospital of Surabaya

**Method:** This research was successfully carried out by means of observational analytics, with a cross-sectional research design. Moreover, this research data were derived from medical record data of inpatients at Dr. Soetomo Regional General Hospital of Surabaya in the period of January 2018 – December 2020, with a total of 144,002 patients. 197 decubitus patients in Pandan I and Pandan Wangi rooms were involved in the sample selection process. Based on the inclusion and exclusion criteria, 57 patients were finally determined as research samples. Samples were selected by utilizing Simple Random Sampling. The number of samples in the case group and control group was amounted to 39 patients, respectively. The data of this research were then analyzed using the Spearman Correlation test.

**Result:** The research results indicated that the least number of decubitus patients at stage I was amounted to 8 people (10.3%), and the highest number of decubitus patients at stage III was amounted to 12 people (15.4%). Furthermore, the results of the Spearman correlation test showed that there was a significant correlation of serum albumin levels and stages of decubitus ( $p = 0.002$ ).

**Conclusion:** There was a significant correlation of serum albumin levels and stages of decubitus in inpatients at Dr. Soetomo Regional General Hospital of Surabaya in the period of January 2018 – December 2020.

**Keywords:** Albumin, Malnutrition, Stages of Decubitus

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## INTRODUCTION

Decubitus ulcer is defined as an area of injured skin, which may cover underlying tissue, muscle and bone caused by prolonged pressure in certain areas, leading to impaired blood circulation in pressured areas.<sup>1</sup>

The prevalence of decubitus ulcers in Asia is amounted to 2.7%- 16.8% and in Indonesia, there was a 40% prevalence of decubitus ulcers in 2017. In 2017, data on the prevalence of decubitus of stages 1-4 in Bandung was obtained. The prevalence in stages of unstageable pressure injury and deep tissue damage was amounted to 10.8%.<sup>2</sup> Moreover, the mortality rate for decubitus ulcers was amounted to 48%. Therefore, efforts to reduce the number of decubitus ulcers are urgently needed, thereby preventing the risk of decubitus severity and reducing the number of decubitus ulcers for not causing other problems such as length of stay and high treatment costs.<sup>1,3</sup>

Decubitus ulcers are associated with multifactors, specifically intrinsic and extrinsic risk factors. According to Alimansur's research, one of the risk factors for decubitus ulcers is poor nutritional status or malnutrition.<sup>4</sup> Malnutrition may be identified through a nutritional screening process, specifically by measuring serum albumin levels.<sup>5</sup> Malnutrition is characterized by low levels of serum albumin in the body, which further contributes to the depth of decubitus ulcers.<sup>6</sup>

Decubitus ulcers often lead to various impacts. Thus, investigation of patients with decubitus is highly required, especially by assessing albumin levels in relation to nutritional status. Patients with decreased albumin levels should be given therapy immediately to normalize their albumin levels and not lead to severe decubitus.<sup>4</sup>

Based on the research of Akarsu et al., a correlation was found between albumin levels and the incidence of decubitus.<sup>7</sup> Meanwhile, Doris et al. found that there was no significant correlation of albumin

and the incidence of decubitus ulcers.<sup>8</sup> This research was intended to determine the correlation of serum albumin levels and stages of decubitus in inpatients at Dr. Soetomo Regional General Hospital of Surabaya.

## METHOD

This research was successfully carried out by means of observational analytics, with a cross-sectional research design. Moreover, this research data were derived from secondary data (medical record) of inpatients in Pandan I and Pandan Wangi rooms at Dr. Soetomo Regional General Hospital of Surabaya in the period of January 2018 – December 2020, with a total of 144,002 patients. The samples in this research consisted of decubitus inpatients at Dr. Soetomo Regional General Hospital of Surabaya, particularly in the Pandan Wangi and Pandan I rooms. The number of samples in the case group and control group was amounted to 39 patients, respectively. Therefore, the total sample was amounted to 78 samples. Samples were determined by means of simple random sampling. The inclusion criteria in this research included inpatients in the Pandan Wangi and Pandan I rooms at Dr. Soetomo Regional General Hospital of Surabaya in the period of January 2018-December 2021 with a diagnosis of decubitus and had data on the stages of decubitus and the results of laboratory examinations of serum albumin levels when the patient was first admitted to the hospital. Furthermore, the exclusion criteria included inpatients at Dr. Soetomo Regional General Hospital of Surabaya in the period of January 2018- December 2021 who was diagnosed with decubitus and did not have complete medical record data, and had neurological disorders, impaired cognitive function and decreased consciousness, and anemia. This research was successfully conducted at Dr. Soetomo Regional General Hospital of Surabaya.

57 decubitus patients met the inclusion and exclusion criteria of the research. Subsequently, the samples were determined

by utilizing simple random sampling to obtain a total sample according to the calculations that had been done, amounting to 39 samples.

The data in this research were then

analyzed using the Statistical Product and Service Solution (SPSS) application version 25 with the Spearman Correlation test to examine the statistics of the research results with a significance value of  $p < 0.05$ .

**RESULTS**

Table 1. Characteristics of Samples Based on Age in Decubitus Patients

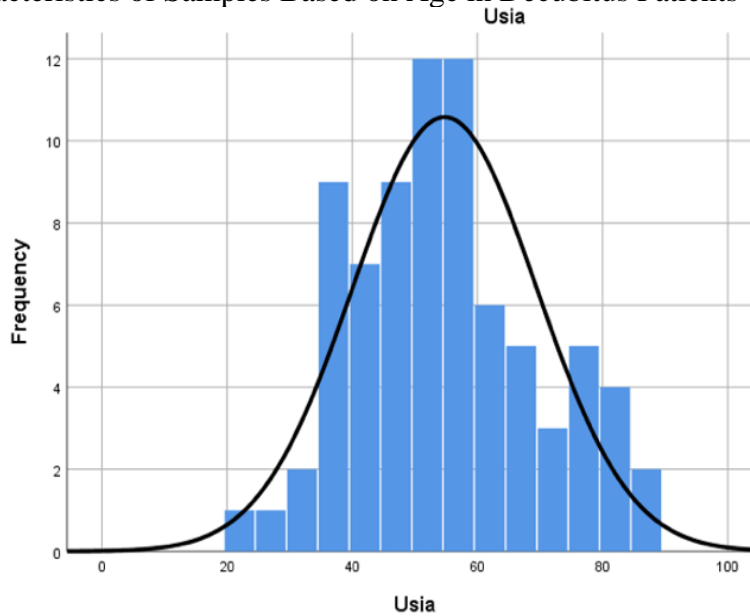


Table 2. Characteristics of Samples Based on Gender

Gender	Frequency	Percentage
Male	32	41%
Female	46	59%
Total	78	100%

Table 3. Analysis of the Correlation of Serum Albumin Levels and Stages of Decubitus

		Decubitus Stages	Serum Albumin Levels
Spear-man'srho	Stages of Decubitus	Correlation Coefficient	1,000
		Sig. (2-tailed)	.
		N	78
	Serum Albumin Levels	Correlation Coefficient	,341**
		Sig. (2-tailed)	,002
		N	78

40 inpatients in Pandan Wangi and Pandan I rooms in the period of January 2018-December 2021 were found to be 40-59 years old (Table 1). Table 2 shows that decubitus inpatients in Pandan Wangi and Pandan I rooms in the period of January 2018- December 2021 were found to be mostly female with a total of 46 patients (59%), while male patients were amounted to 32 patients (41%). Furthermore, the results of data analysis using the SPSS application with the Spearman correlation test showed that there was a significant correlation of serum albumin levels and stages of decubitus with the value of Sig. or  $p = 0.002$ . These results could be declared significant, because the obtained  $p$  value was  $<0.05$ .

## DISCUSSION

The results of the distribution of sample characteristics based on age and gender presented in Tables 1 and 2 indicated that this research is in line with previous research conducted by Sulidah, Susilowati (2017), which stated that the number of female patients was found to be more than male patients. This is associated with a higher life expectancy of women compared to men. Individuals with increasing age, will tend to be unable to mobilize because of their weakness and illness. Moreover, the research stated that patients with old age have a higher risk of decubitus. This is caused by a decrease in elasticity and vascularity in old age.<sup>3</sup>

Based on the results of data analysis of the correlation of serum albumin levels and stages of decubitus in inpatients in the Pandan Wangi and Pandan I rooms in the period of January 2018-December 2021 presented in table 5.4, it was found that the value of Sig. or  $p = 0.002$ , which means that there was a correlation of serum albumin levels and stages of decubitus in inpatients at Dr. Soetomo Regional General Hospital of Surabaya. This is in line with previous research conducted by Akarsu et al. (2018), which stated that low serum albumin levels are associated with the incidence of decubitus. Serum albumin levels are

considered a risk factor for decubitus.<sup>7</sup> According to the research conducted by Muji, Huriyah (2017), nutrition was found to be one of the contributing factors to the incidence of decubitus ulcers.<sup>9</sup>

Decubitus ulcers may be affected by several factors, including malnutrition. Malnutrition can be identified based on serum albumin levels in the human body, low albumin levels ( $<3.5$  mg/dL) are considered as one of the parameters of malnutrition.<sup>5</sup> The amount of protein in the body of malnourished patients will be significantly reduced, so that the tissue around the bulge can be edematous and impede blood circulation, thereby increasing the risk of decubitus ulcers. Decubitus ulcers are also capable of lowering serum albumin levels in the body, because deep wounds of the patient will significantly secrete a lot of protein, and albumin is regarded as the main protein in the human body.<sup>4</sup>

## CONCLUSION

Referring to the results of the research, it can be concluded that there was a significant correlation of serum albumin levels and stages of decubitus in inpatients at Dr. Soetomo Regional General Hospital of Surabaya. Moreover, the lower the patient's serum albumin level, the more severe the stage of decubitus experienced by the patient.

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