

Factors Associated with Length of Stay of Inpatients: A Cross-sectional Study at RSD KRMT Wongsonegoro, Semarang, 2024

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Abstract— Length of hospital stay is an essential indicator of the quality of inpatient hospital services, including in RSD KRMT Wongsonegoro as a Type B hospital in Semarang City. There were various factors related to the length of hospital stay. Therefore, the study objective was to determine the factors associated with the length of stay of inpatients at RSD KRMT Wongsonegoro Semarang. The cross-sectional study distributed a questionnaire to 122 inpatients in RSD KRMT Wongsonegoro from January to February 2024. The variables in this study were patient characteristics, self-rated health status (physical and mental), and hospital stay. The data analysis used descriptive and inferential statistics with comparative tests to determine the study objective. The results showed that the average length of hospital stay among the respondents was five days. The majority of respondents in this study were female patients (55.7%), junior high school (36.9%) and high school graduates (31.1%), and aged >45 years or older (63.9%). The results of the comparison test showed that gender (p-value: 0.987), education (p-value: 0.278), and age (p-value: 0.425) were not associated with the number of patient care days. Based on the comparison test, self-rated physical health (p-value: 0.034) and self-rated mental health (p-value: 0.016) were significantly associated with the number of hospital days. In general, patients who perceived poor physical and psychological health had longer hospital stays than patients who perceived better physical and mental health. Therefore, hospitals need to assess patients' perceived physical and mental health status to improve inpatient services.

Keywords— Hospital Stay, Length of Stay Factors, Inpatient

I. BACKGROUND

Hospitals is an essential health service providers in the community health system with the highest cost operational in health systems. About half of the government's expenditure was spent for healthcare services in developing countries based on the WHO statistics [1] and has risen faster than economic growth among Organisation for Economic Co-operation and Development (OECD) countries. Several countries also reported healthcare resources shortage due to an increased public demand for healthcare services.[2] According to the BPS data, the hospitalization rate in Indonesia increased from 2.91 percent in 2022 to 3.29 percent in 2023.

The indicators that is necessary to manage hospital care, hospital quality control, hospital services availability, hospital policy and planning, as well as to determine the efficiency and use of hospital resources, is the length of hospital stay.[3] Length hospital stays is often considered a measure of resource use, cost, and disease severity. [4], [5] The length of hospital stay depends on several factors, including the type of medical condition, the severity of the condition, the type of medical intervention provided, patient characteristics, and environmental or organizational factors.[5] Still, there is no clear comprehensive agreement on factors that could affecting patient LOS.[3]

According to Databoks.Katadata, the average hospital inpatient utilization in Semarang City is ranked fifth in Central Java Province in 2023 with a record of 0.42 patients per 100 thousand population/week. The city of Semarang has 26 hospitals spread across the sub-districts. RSD KRMT Wongsonegoro is one of the regional hospitals with a high number of patient visits in the East Semarang region. A good understanding of length of stay helps hospital management prioritize, improve services, and allocate resources according to differences in patient LOS and demographic factors.[3] Therefore, the study objective was to determine the factors associated with the length of stay of inpatients in RSD KRMT Wongsonegoro.

II. METHOD

The study was descriptive with cross-sectional approach. Our study measured the factors associated with the length of stay of inpatients in RSD KRMT Wongsonegoro, Semarang. The respondents were 122 inpatients who had been discharged from the Inpatient Care Unit of RSD KRMT Wongsonegoro during the survey, which had been calculated using the cross-sectional study sample formula without population size in 95% significance level and 50% incidence proportion. We selected respondents using incidental sampling technique. The study distributed questionnaire to measure the characteristics includes

age (adult age 16-45 years and elder age more than 45 years), gender, education, self-rated overall health (Poor, Fair, Good, Very Good, Excellent), self-rated mental and emotional health (Poor, Fair, Good, Very Good, Excellent), and length of stay (days). We performed statistic analysis non-parametric tests (Mann-Whitney U Test and Kruskal Wallis Test using IBM SPSS to determine relationship between the mean length of stay and gender, age, education, self-rated overall health, and self-rated mental-emotional health.

III. RESULTS AND DISCUSSION

The study was conducted in the early 2024 with 122 respondents. According to the Indonesian Ministry of Health, AVLOS is the average length of stay of a patient with an ideal AVLOS value between 6-9 days.[6] In our study, the average LOS of the inpatients at RSD KRMT Wongsonegoro in the early 2024 was five days or slightly under the ideal value. However, these results might be influenced by the highly variation of diagnoses among respondents in this study.

Table 1. Factors Related with Patient LOS

Variables	f	%	LOS	Sig
Gender				0.987*
Male	54	44.3	4.7	
Female	68	55.7	4.8	
Education				0.278**
Never attended	3	2.5	5.0	
Elementary	28	23.0	4.9	
Junior High	45	36.9	5.2	
High School	38	31.1	4.4	
College	8	6.6	3.5	
Age				0.425*
Adults (16-45 years)	44	36.1	4.9	
Elders (more than 45 years)	78	63.9	4.7	
Self-rated overall health				0.034**
Poor	18	14.8	6.7	
Fair	55	45.1	4.5	
Good	39	32.0	4.4	
Excellent	10	8.2	4.5	
Self-rated mental health				0.016**
Poor	9	7.4	5.6	
Fair	46	37.7	5.4	
Good	54	44.3	4.3	
Excellent	13	10.7	3.8	

Several factors could influence the length of hospital stay such as the patient discharge process, patient’s age, and the underlying diseases of patients.[1] Most of respondents were female (55.7%), junior high (36.9%) and high school (31.1%) graduates, and aged more than 45 years (63.9%). A literature study mentioned that patient demographic factors such as age, gender, occupation, residence, and marital status were factors associated with patient LOS.[3] In this study, LOS among female patients (4,8 days) slightly higher than male patients (4,7 days) and based on comparative test there have no significant different (p-value 0,987) of LOS between male and female patients. These results both consistent [7][8] and inconsistent with other study. [9][2] Gender is considered to have no significant effect on LOS because several other factors might have more influence on the length of stay, such as diagnosis, type of treatment, etc. According to several studies on LOS, age is one of the socio-demographic variables associated with LOS.[2][1][10][11][12] However, the results of our analysis showed that age was not related to patient LOS (sig 0.425). It might be because the proportion of patients by age in this study was uneven or dominated by patients older than 45. Nonetheless, measuring the association of patients' socio-demographic characteristics with LOS still needs to be considered by focusing the sample criteria according to the type of patient services or diagnosis. One study mentioned that there was a strong correlation between age and LOS for trauma patients.[11]

Self-perceived health is a powerful concept that defines the individual's perception of their health status. Furthermore, self-perceived health is necessary information for monitoring health status changes. Many studies showed that the number of chronic diseases is directly associated with self-perceived health. [13] Self-perceived health is also needed to understand the health status of patients in healthcare facilities. Patients' descriptions of their health status are valuable because many patients are sensitive or aware of the subtle changes in their health status, which may not be quantitatively assessed by their healthcare provider.[14] Therefore, this study examines the relationship between perceived overall health and mental health of inpatients and LOS. The results showed that perceived overall health (sig 0,034) and mental health (sig 0,016) were significantly associated with LOS. Patients who perceived their health to be poor had a longer average LOS (6.7 days) than patients who perceived their health to be better. Similarly, patients who felt their mental and emotional state was poor had a longer average LOS (5.6 days) than patients who felt their mental and emotional state was better. Therefore, knowing patients' perceived health needs is necessary to provide proper clinical services.

This study has some limitations. First, it is a cross-sectional study where the results may differ over time. Second, the patient's physical and mental health status was measured by a single question from a questionnaire, so the results might be influenced by the respondent's condition. Thirdly, the sample of patients in this study varied greatly because the researchers measured all patients in the Inpatient Unit regardless of diagnosis, type of treatment, and other factors.

IV. CONCLUSIONS AND SUGGESTIONS

Based on the overall results, the average length of hospital stay among inpatient in RSD KRMT Wongsonegoro in the early 2024 was five days. The majority of respondents in this study were female patients (55.7%), junior high school (36.9%) and high school graduates (31.1%), and aged >45 years or older (63.9%). The results of the comparison test showed that gender (p-value: 0.987), education (p-value: 0.278), and age (p-value: 0.425) were not associated with the number of patient care days. Based on the comparison test, self-rated physical health (p-value: 0.034) and self-rated mental health (p-value: 0.016) were significantly associated with the number of hospital days. In general, patients who perceived poor physical and psychological health had longer hospital stays than patients who perceived better physical and mental health. Therefore, hospitals need to assess patient perceived on their physical and mental health status to improve inpatient services.

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