

## The Relationship Between Environmental Sanitation And Inpatient Satisfaction at North Buton District General Hospital

### Hubungan Sanitasi Lingkungan dengan Kepuasan Pasien Rawat Inap di RSUD Kabupaten Buton Utara

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#### ABSTRACT

Patient satisfaction is affected by the hospital environment, facilities, and the healthcare services offered. Properly addressing hospital environmental conditions, also known as environmental sanitation, is essential to providing a clean and comfortable environment that prevents cross-infection and contamination. Common environmental sanitation problems at RSUD Buton Utara (Buton Utara Regional General Hospital) include water and sanitation, pest and vector control, building and facility sanitation, and environmental cleanliness. This study aims to determine the association between inpatient satisfaction and hospital environmental sanitation at RSUD Buton Utara. A cross-sectional research design and quantitative methodology were employed. The sample included 118 patients, and the population consisted of 167 patients. Patient satisfaction was the dependent variable. The independent factors were water and air quality, food quality, sanitation of buildings and facilities, waste safety, and the presence of pests and vectors. There was an association between inpatient satisfaction and water and sanitation ( $p = 0.016$ ), air and sanitation ( $p = 0.004$ ), building and facility conditions ( $p = 0.000$ ), waste safety ( $p = 0.009$ ), and the presence of pests and vectors ( $p = 0.000$ ). However, there was no association between patient satisfaction and food sanitation ( $p = 1.000$ ). RSUD Buton Utara needs to provide, maintain, and enhance facilities that can improve hospital environmental sanitation.

**Keywords:** Satisfaction, inpatients, hospital, sanitation.

#### ABSTRAK

Lingkungan rumah sakit memiliki dampak terhadap kepuasan pasien, di samping fasilitas dan layanan medis yang ditawarkan. Karena tujuan sanitasi rumah sakit adalah untuk menyediakan suasana bersih dan nyaman yang dapat mencegah infeksi silang dan pencemaran lingkungan, kondisi lingkungan rumah sakit, yang juga dikenal sebagai sanitasi lingkungan rumah sakit, harus dipertimbangkan. Sanitasi air, hama dan vektor, bangunan dan fasilitas, serta kebersihan lingkungan merupakan beberapa permasalahan sanitasi lingkungan yang masih umum dihadapi di RSUD Buton Utara. Tujuan penelitian ini adalah untuk mengetahui bagaimana kepuasan pasien rawat inap di RSUD Buton Utara berkaitan dengan sanitasi lingkungan rumah sakit. Desain penelitian potong lintang dan metodologi kuantitatif digunakan. Terdapat 118 pasien dalam sampel dan 167 pasien dalam populasi. Kepuasan pasien merupakan variabel dependen. Kualitas air dan udara, kualitas makanan, kesehatan bangunan dan fasilitas, keamanan limbah, serta keberadaan hama dan vektor merupakan faktor independen. Terdapat hubungan antara kepuasan pasien rawat inap dan kesehatan air (0,016), kesehatan udara (0,004), kondisi bangunan serta fasilitas (0,000), keamanan limbah (0,009), keberadaan hama dan vektor (0,000), dan tidak ada hubungan kepuasan pasien dengan kesehatan makanan (1,000). Fasilitas yang dapat meningkatkan sanitasi lingkungan rumah sakit perlu disediakan, dipelihara, dan ditingkatkan oleh RSUD Buton Utara.

**Kata Kunci:** Kepuasan, pasien rawat inap, rumah sakit, sanitasi.

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## INTRODUCTION

Hospitals are healthcare institutions that provide healthcare services, including inpatient, outpatient, and emergency care.<sup>1</sup> Hospitals are required to be able to provide good service to their patients in order to ensure their satisfaction.<sup>2</sup> One measure of quality service is the level of patient satisfaction. Patient satisfaction is a state in which a patient's needs, desires, and expectations are met through the products or services they receive.<sup>3</sup> Patient satisfaction is a key indicator of a healthcare facility's standards and serves as a measure of service quality that will influence the facility's profitability.<sup>4</sup> According to Kotler, there are four methods for measuring customer satisfaction, namely: the complaints and suggestions system; customer satisfaction surveys; mystery shopping; and lost customer analysis.<sup>5</sup>

Based on data from the World Health Organisation (WHO) report for 2021, it was found that the highest level of hospital patient satisfaction across various countries was in Sweden, with a satisfaction index of 92.37 per cent, followed by Finland (91.92 per cent), Norway (90.75 per cent), the USA (89.33 per cent) and Denmark (89.29 per cent), whilst the lowest levels of patient satisfaction were recorded in Kenya (40.4 per cent) and India (34.4 per cent). Patient satisfaction standards in healthcare are set at the national level by the Ministry of Health of the Republic of Indonesia under Regulation No. 43 of 2016. According to the Ministry of Health, the Minimum Service Standard for patient satisfaction is above 95 per cent.<sup>6</sup> Patient satisfaction figures in several regions of Indonesia show that in Central Maluku it stood at 42.8 per

cent, in West Sumatra at 44.4 per cent, in Surabaya at 68 per cent, in Bandung at 75.12 per cent, and in Bogor at 67.43 per cent.<sup>7</sup> In Southeast Sulawesi Province, patient satisfaction reached 73.68% in 2020, but fell to 73.10% in 2021; this figure falls short of the patient satisfaction target for Southeast Sulawesi Province set by the Indonesian Ministry of Health.

Patient satisfaction in hospitals is not only derived from the facilities and healthcare services provided by the hospital, but is also supported by the hospital environment, particularly an environment that provides a sense of safety and comfort, and, above all, one that minimises the risk of disease transmission to patients and hospital visitors, given the large number of patients in hospitals with a wide variety of illnesses. The hospital environment, commonly referred to as hospital environmental sanitation, must be given due attention, as the aim of hospital sanitation is to create a clean and comfortable environment that prevents cross-infection and environmental contamination.<sup>8</sup> Hospital environmental health measures are efforts to prevent diseases and/or health problems arising from environmental risk factors, with a view to achieving a healthy environment in terms of its physical, chemical, biological, and social aspects within the hospital setting.<sup>9</sup>

Based on an analysis of the results of the public satisfaction survey at the North Buton District General Hospital, covering the service elements of compliance with requirements, procedures, service time, costs/fees, service provision, staff competence, staff behaviour,



facilities and infrastructure, and complaint handling, with a maximum Public Satisfaction Index (PSI) score of 4.00, the PSI score for 2022 was 3.220 (Good), for 2023 it was 3.114 (Good), and for 2024 it was 3.013 (Good). However, no specific survey regarding satisfaction with environmental sanitation, nor any previous research on this topic, has ever been conducted at the North Buton District General Hospital.

The North Buton District General Hospital is a Type D public hospital and is the only hospital operating in North Buton District. This naturally makes it a priority to provide adequate healthcare services that support the health of the community, particularly in North Buton District, as there are no other hospitals available. Several visitors and patients at the North Buton District General Hospital have complained about the presence of stray animals roaming around the hospital, the cleanliness of the bathrooms and toilets, the cleanliness of the inpatient wards, the cleanliness of the hospital grounds, the condition of the buildings and other facilities requiring maintenance, as well as food waste left by hospital visitors, which attracts disease vectors such as flies. Naturally, all these complaints from hospital visitors disrupt the comfort of patients and visitors alike and also lower the hospital's standards of cleanliness. Therefore, research into patient satisfaction is required to enable the hospital to evaluate its environmental sanitation and improve the quality and reputation of the hospital.

Requirements regarding water hygiene, air quality and food safety in hospitals are regulated by Indonesian Ministry of Health Regulation No. 7 of

2019.<sup>10</sup> Requirements regarding hospital facilities and buildings are regulated by Indonesian Ministry of Health Regulation No. 40 of 2022.<sup>11</sup> The requirements for the management of medical waste in hospitals are set out in Indonesian Ministry of Health Regulation No. 8 of 2020.<sup>12</sup> The requirements regarding vectors and pests in hospitals are set out in Indonesian Ministry of Health Regulation No. 50 of 2017.<sup>13</sup>

## **MATERIALS AND METHODS**

The researchers in this study employed a cross-sectional study design and quantitative research methodology. Data analysis was carried out using validity and reliability tests with SPSS for Windows. Data were considered valid if the calculated *r* value was greater than the table *r* value (0.361) at a 5% significance level, and data were considered reliable if Combach's Alpha was greater than 0.6. The data were then analysed using two methods: univariate analysis and bivariate analysis. Univariate analysis was used to obtain an overview of the distribution of the respondents' responses in order to describe the dependent and independent variables. Bivariate analysis was carried out on each variable under investigation and linked to patient satisfaction using the Chi-square test at a 95 per cent confidence level ( $\alpha = 0.05$ ) via the SPSS for Windows software, which indicated the presence or absence of a significant relationship. This study employed a simultaneous approach, involving data collection at specific time points, to investigate the relationship between the independent and dependent variables. The dependent variable was the level of patient



satisfaction. Air quality, food safety, building and facility conditions, waste management, and the presence of pests and vectors constituted the independent factors. In this study, 118 patients were selected using proportional random sampling from a population of 167 patients who had received inpatient care over the previous three months (November–December 2024 and January 2025) at the North Buton District General Hospital. Both primary data from questionnaire responses and secondary data from relevant organisations responsible for the research subjects were utilised in the data collection method.

**RESULTS**

Inpatient wards comprise several units within the hospital that provide inpatient care for patients.

**Table 1. Distribution of respondents by inpatient installation**

Inpatient Installation	Frequency	Presentase (%)
Adult hospitalization	69	58,5
Midwifery	31	26,3
Child Nursing	12	10,2
ICU	6	5,0
<b>Quantity</b>	<b>118</b>	<b>100</b>

Source. Premiere date 2025

Table 1 shows that the number of inpatient wards comprised four wards, and the study was conducted on patients in these wards, namely: the adult inpatient ward with 69 patients (58.5%), the obstetrics ward with 31 patients (26.3%), the paediatric ward with 12 patients (10.2%), and the ICU ward with 6 patients (5.0%). The following are the results obtained from the variables examined in the existing research.

**Table 2. The Relationship between Water Health, Air Health, Food Health, Facility and Building Health, Waste Safety, the Presence of Vectors and Disturbing Animals with Inpatient Satisfaction at North Buton Regency Hospital**

Variabel	Patient Satisfaction				Total		p value	π	OR
	Dissatisfied		Puas		n	%			
	n	%	n	%					
<b>Water Health</b>									
Less	19	50	19	50	38	100	0.016	0.221	2.636
Good	22	27.5	58	72.5	80	100			
Total	41	34.7	77	65.3	118	100			
<b>Air Health</b>									
Less	30	48.4	32	51.6	62	100	0.001	0.301	3.835
Good	11	19.5	45	36.5	56	100			
Total	41	34.7	77	65.3	118	100			
<b>Food Health</b>									
Less	1	33.3	2	66.7	3	100	1.000	0.005	0.938
Good	40	34.8	75	65.2	115	100			
Total	41	34.7	77	65.3	118	100			
<b>Health of Facilities and Buildings</b>									
Less	33	71.7	13	28.3	46	100	0.000	0.621	20.308
Good	8	11.1	64	88.9	72	100			
Total	41	34.7	77	65.3	118	100			



<b>Waste Security</b>									
Less	29	45.3	35	54.7	64	100			
Good	12	22.2	42	77.8	54	100	0.009	0.242	2.900
Total	41	34.7	77	65.3	118	100			
<b>The Existence of Vectors and Disturbing Animals</b>									
Less	27	58.7	19	41.3	46	100			
Good	14	19.4	58	80.6	72	100	0.000	0.402	5.887
Total	41	34.7	77	65.3	118	100			

Source. Premiere date 2025

Table 2 shows the results of the study on the variables under investigation, with statistical test results using the chi-square test at a 95% confidence level. The water quality variable had a p-value of  $< 0.05$ , namely 0.016. This figure indicates that water quality is associated with the satisfaction of inpatients at the North Buton District General Hospital, meaning that  $H_0$  is rejected and  $H_1$  is accepted, with a correlation coefficient of 0.221, indicating that there is a weak relationship between water quality and patient satisfaction. Furthermore, the risk estimate calculation yields an odds ratio (OR) of 2.636 ( $OR > 1$ ), meaning that the water quality variable in this study constitutes a risk factor. The air quality variable has a p-value  $< 0.05$ , namely 0.001.

This figure indicates that air quality is associated with the satisfaction of inpatients at the North Buton District General Hospital, meaning that  $H_0$  is rejected and  $H_1$  is accepted, with a correlation coefficient of 0.301, indicating that there is a weak relationship between air quality and patient satisfaction; furthermore, the risk estimate calculation yielded an odds ratio (OR) of 3.835 ( $OR > 1$ ), which means that the air quality variable in this study is a risk factor. The food safety variable has a p-value  $> 0.05$ , namely 1.000. This figure indicates that food safety is not associated with the

satisfaction of inpatients at the North Buton District General Hospital, meaning that  $H_0$  is accepted and  $H_1$  is rejected, with a correlation coefficient of 0.005, indicating that there is a very weak relationship between food safety and patient satisfaction. Furthermore, the risk estimate calculation yielded an odds ratio (OR) of 0.938 ( $OR < 1$ ), which means that the food safety variable in this study acts as a protective factor. The facility and building safety variable has a p-value  $< 0.05$ , specifically 0.000.

This figure indicates that the health of facilities and buildings is associated with the satisfaction of inpatients at the North Buton District General Hospital, meaning that  $H_1$  is accepted and  $H_0$  is rejected, with a correlation coefficient of 0.621, indicating that the health of facilities and buildings has a strong relationship with patient satisfaction; furthermore, the risk estimate calculation yielded an Odds Ratio (OR) of 20.308 ( $OR > 1$ ), which means that the variable 'condition of facilities and buildings' in this study is a risk factor. The variable 'waste safety' has a p-value  $< 0.05$ , specifically 0.009. This figure indicates that waste safety is associated with the satisfaction of inpatients at the North Buton District General Hospital, meaning that  $H_1$  is accepted and  $H_0$  is rejected, with a correlation coefficient of 0.242,

indicating that waste safety and patient satisfaction have a weak relationship; furthermore, the risk estimate calculation yielded an odds ratio (OR) of 2.900 (OR > 1), meaning that the waste safety variable in this study constitutes a risk factor. The variable concerning the presence of vectors and pests has a p-value < 0.05, specifically 0.000. This figure indicates that the presence of vectors and pests is associated with the satisfaction of inpatients at the North Buton District General Hospital, meaning that  $H_a$  is accepted and  $H_0$  is rejected, with a correlation coefficient of 0.402, indicating that the presence of vectors and pests has a weak relationship with patient satisfaction; furthermore, the risk estimate calculation yielded an odds ratio (OR) of 5.887 (OR > 1), meaning that the variables relating to the presence of vectors and pests in this study constitute risk factors.

## DISCUSSION

Water safety in hospitals is vital for preventing the spread of disease, not only amongst patients but also amongst healthcare workers. Patients' water needs in hospitals comprise drinking water and water for sanitation purposes. Many respondents expressed satisfaction because their daily water needs for sanitation purposes, such as bathing and washing, were always met; water was always available at any time, and it was clear and odourless. However, respondents' dissatisfaction stemmed from the lack of drinking water available in the hospital. Patients' drinking water needs relied solely on their families or visitors, meaning the availability of drinking water for patients was limited. Water is one of the most

essential basic needs for human survival. It is a primary necessity used by people in their daily lives for various purposes such as drinking, cooking, bathing, washing, religious practices, and so on. Therefore, water must be utilised and managed as effectively as possible.<sup>14</sup>

Good air quality refers to air that is relatively clean and free from pollutants. Air quality in this study also encompasses lighting, air circulation, clean and dust-free air, odours, temperature, and noise levels for inpatients. Although the percentages of people reporting air quality as 'very good' and 'poor' were almost equal, according to the study's findings, the percentage reporting poor air quality was significantly higher. This is due to: a.) The hospital provides facilities such as air conditioning, fans, and extractor fans, but pays insufficient attention to their cleanliness; b.) Although signs prohibiting smoking have been put up throughout the hospital, visitors and patients' families are still found to disregard this ban and continue to smoke on hospital premises. There are windows in every patient room, but there is dust around them; and d.) Although the windows can be opened, patients and/or their families choose to keep them closed. This affects the temperature, humidity, and air exchange within the patient's room, disrupting the process by which fresh air enters the room from outside and air pollutants are expelled from the room.

Air quality is vital not only for supporting human health but also for providing a sense of comfort. Ventilation is the process of exchanging air from outside into a room, and vice versa. Good ventilation provides freshness and coolness, as it



helps lower the temperature and ensures an adequate supply of oxygen. Temperature regulation is vital for comfort and health; temperatures that are too hot or too cold, and humidity levels that are too high or too low, can cause discomfort for room occupants. Stuffy rooms with no air exchange can lead to the spread of disease amongst patients, as germs can linger indoors.<sup>15</sup> High humidity and dust can also cause mould and other biological contaminants to proliferate.<sup>16</sup>

Food safety involves the prevention of biological, chemical, and physical contamination of food that could be harmful to human health. According to this study, food safety encompasses food delivery staff, containers, food quality, and sanitation. The research findings revealed a significant disparity between respondents who reported good food safety and those who reported poor food safety, with the former being far more numerous. This is because a great many patients stated that the food provided was always fresh, the containers used for serving the food were made of safe materials and were clean, and the food was always kept in sealed containers, thus preventing vectors from coming into contact with it. Consequently, the results of the study on the food safety variable indicated that it was not associated with the satisfaction of inpatients at the North Buton District General Hospital. In managing all the facilities offered professionally, they must comply with applicable health regulations, so that service users can enjoy the benefits with guarantees of health and hygiene.<sup>17</sup> The cleanliness of cutlery and food must be maintained at all times, as this affects patients' satisfaction when consuming the

meals provided.<sup>18</sup>

The health and safety of hospital facilities and buildings are essential for ensuring quality, comfort, and safety for patients, staff, and visitors; this encompasses cleanliness, building safety, and the proper functioning of necessary facilities. The condition of facilities and buildings in this study covers the facilities required by patients as well as the condition of the building and other facilities, such as the condition of walls, ceilings, floors, doors and windows, toilets/bathrooms, and corridors and hallways at the North Buton District General Hospital. The results of the study indicate that the condition of facilities and buildings in this study showed the strongest correlation compared to the other independent variables examined. This suggests that this variable plays a crucial role in influencing the satisfaction of patients undergoing inpatient care at the North Buton District General Hospital. However, among patients who reported that the condition of the facilities and buildings was poor, the main reasons were: a.) ceilings with mould and holes, spider webs, and even the presence of other insects such as geckos and grasshoppers; b.) walls that were not waterproof, mouldy, and in some cases cracked; c.) floors that become waterlogged when it rains, posing a risk of falls; d.) not all windows can be opened fully; e.) patient bathrooms that are not always cleaned daily and lack toilet paper and soap; and f.) corridors and hallways that are frequently used as resting and dining areas by visitors or patients' families, resulting in food waste being discarded nearby and making the area dirty and even slippery if drinks are spilled.



Hospitals are required to understand patients' needs and wishes, which can influence patient satisfaction based on the quality of care provided, a factor that relates not only to patients' recovery but also to their satisfaction with the facilities and infrastructure provided, as well as an environment that makes patients feel comfortable and safe.<sup>19</sup>

Hospital waste safety refers to efforts undertaken to manage waste so that it does not pose health risks or environmental hazards. Based on the study's findings, the percentage of respondents who stated that waste safety was inadequate was higher than that of those who stated it was adequate. This is due to: a.) The availability of waste bins appropriate to the type of waste, but not all bins have clear labels indicating the type of waste; b.) The availability of bins for infectious waste, but not in patient rooms or in locations easily accessible to patients and their families; and c.) Waste is piling up, yet has not yet been collected by waste management staff, meaning it is easily scattered.

The management of hazardous and toxic waste (B3) is a crucial aspect of safeguarding environmental sustainability and public health.<sup>20</sup> Efforts to manage hospital medical waste are one way of creating a clean, comfortable, and hygienic hospital environment, ensuring that both patients and visitors feel at ease.<sup>21</sup>

As well as being an indicator of poor hygiene in hospitals, the presence of pests and vectors in such facilities increases the likelihood of patients contracting diseases transmitted by these creatures. Vectors and pests frequently reported by patients at the North Buton District General Hospital include mosquitoes, flies, and stray dogs still seen roaming

around the hospital grounds. The results of the study show that a greater number of respondents reported the presence of vectors and pests as 'good' compared to those who rated it as 'poor'. This is due to the continued prevalence of mosquitoes, as the hospital is situated amidst community plantations densely populated with trees and other forest vegetation; as for the presence of flies, this is often caused by food waste left by patients or their families in patient rooms, as well as food waste from visitors who usually eat together in the hospital corridors and lobbies.

The North Buton District General Hospital does not yet have a fence surrounding the grounds to prevent animals or other creatures from entering; this is why dogs and other animals are present on the hospital grounds. The presence of vectors and nuisance animals requires control measures as they can pose health risks, including the transmission of disease. Vectors and nuisance animals can also disrupt the comfort of patients and other hospital visitors. The occurrence of disease outbreaks such as dengue fever, caused by mosquitoes, and other vector-borne diseases in tropical and subtropical regions makes the control of these diseases a top priority for many affected countries.<sup>22</sup>

## CONCLUSIONS AND SUGGESTIONS

Water quality, air quality, the condition of facilities and buildings, waste management, and the presence of vectors and pests, in relation to the satisfaction of inpatients at "Buton Utara Regional General Hospital". At Buton Utara Regional General Hospital, however, there was no correlation between dietary health variables and the



satisfaction of inpatients.

Recommendations for the hospital include providing drinking water for patients' needs, equipping every patient room with air conditioning or cooling units, carrying out regular maintenance and cleaning of the equipment, maintaining food hygiene and the safety of food containers, repairing cracked or damaged buildings, replacing damaged waste bins, investigating the causes of vector presence, and implementing control measures.

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### CONFLICT OF INTEREST

The author ensures that all data and information published have been compiled objectively and independently, and are not influenced by the personal, financial, or institutional interests of any party. The author therefore confirms that there are no relationships or circumstances that could potentially give rise to a conflict of interest in relation to the research and publication of this article.

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