Path Analysis of Factors Influencing the Quality of Health Services and Inpatient's Satisfaction in Hospitals

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ABSTRACT

Background: Quality of health services is an effort to provide health services to individuals and populations in increasing the likelihood of desired health outcomes. Patient satisfaction is an indicator in assessing the quality of health services. This study aims to analyze the factors that influence the quality of health services and satisfaction of inpatients in hospitals.

Subjects and Method: The research, with a cross-sectional study design, was carried out at public and private hospitals in Mataram City from November to December 2023. A total of 207 inpatients were selected using simple random sampling in the study. The dependent variables are health service quality and patient satisfaction. The independent variables are gender, education level, income, BPJS status (payment type), inpatient class, and length of stay. Collecting data on perceptions of health service quality and patient satisfaction using a structured questionnaire prepared based on Parasuraman's Servqual concept (1985).

Results: Patient satisfaction is significantly influenced by perceived quality of health services (b= 0.81; 95% CI = 0.76 to 0.86; p < 0.001) and patient education level (b= -0.08; 95% CI= -0.17 to -0.003; p= 0.04). Perceived quality of health services is significantly influenced by income factors (b= 0.22; 95% CI= 0.09 to 0.35; p= 0.001) and patient inpatient room class (b= 0.40; 95% CI= 0.28 to 0.52; p <0.001). Perception of service quality is not significantly influenced by the factors gender, education, BPJS status, and length of stay.

Conclusion: Patient satisfaction is significantly influenced by the quality of health services and the patient's level of education. The quality of health services is significantly influenced by income factors and the patient's inpatient room class. Service quality is not significantly influenced by the factors gender, education, BPJS status, and length of stay.

Keywords: pathway analysis, inpatients, quality of health services, satisfaction

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BACKGROUND

A hospital is one of the health service facilities whose administration has been regulated by the government or community as a manifestation of health development efforts. A hospital is a health service facility that provides comprehensive individual health services

through promotive, preventive, curative, rehabilitative and/or palliative health services by providing inpatient, outpatient and emergency services (Government of Indonesia, 2023).

The improvement in the provision of hospital health services today is quite rapid. In Mataram City there are 16 hospitals consisting of 12 general hospitals and four special hospitals. These include three class B hospitals, nine class C hospitals, and four class D hospitals (Diskominfotik NTB, 2021). An increase in the number of hospitals must also be accompanied by an increase in their quality.

Hospitals are legally responsible for all losses incurred due to negligence committed by hospital health human resources (Government of Indonesia, 2023). Based on WHO data (2020) shows that 5.7 to 8.4 million people die due to low quality health services every year in low and middle income countries, which represents up to 15% of total deaths in these countries. Of patients in need of health care, 60% of deaths occur due to poor service quality and 40% of deaths are due to underutilization of the health care system, especially in low and middle income countries. It is estimated that high quality services can prevent 2.5 million deaths from cardiovascular disease, 900,000 deaths. due to tuberculosis, 1 million newborn deaths, and half of all maternal deaths each year. Poor service quality results in a loss of people's productivity in the country so that it can be estimated that they will experience losses of 1.4 to 1.6 billion each year (WHO, 2020).

Inpatient services are part of health services whose quality must be considered in hospitals. The provision of inpatient services must be implemented based on the principle of equity. Regarding patients requiring inpatient treatment in hospital, the service class at the hospital is given based on standard class. The principle of equity is equality in obtaining services according to medical needs which is not tied to the amount of contributions that have been paid (Kadir, 2022).

Patient satisfaction is an indicator in assessing the quality of health services in an agency, because of the high level of patient satisfaction, if the service received from the health worker is in line with or more than what the patient expected (Antari, 2019). Patient satisfaction can be measured from the suitability and nonconformity of the health services provided, so that among patients there will be feelings of satisfaction or dissatisfaction with the services they have received (Kuntoro & Istiono, 2017). Assessment of patient satisfaction with the quality of hospital services is also influenced by patient socio-demographic factors including age, gender, education level and income level. Apart from that, National Health Insurance (JKN) membership, length of stay and the ward where the patient is treated also influence the patient's assessment of their satisfaction (Muzer et al., 2020; Rahmadianti, 2020).

Quality health services will have an impact on patient satisfaction as service recipients and will lead to repeat visits, thereby increasing patient loyalty to health service facilities and the level of patient compliance in carrying out the treatment provided by health workers. So, if these five elements are paid attention to, it is hoped that it will provide satisfaction to patients (Alma, 2016). Patient satisfaction is the output of health services and a change in the health service system that we want to make (Rahmadianti, 2020). The results of measuring patient satisfaction will be used as a basis for supporting changes to the health service system. Based on this, researchers want to conduct research on the influence of patient gender, patient education level, patient income, patient BPJS

status (type of payment), patient inpatient class, and length of stay. patient hospitalization on the quality of health services and patient satisfaction in hospitals in the city of Mataram.

SUBJECTS AND METHOD

1. Study Design
The study design used in this research is observational analytic with a cross-sectional approach. This research was conducted at public and private hospitals in Mataram City from November to December 2023.

2. Population and Sample
The source population in this study was all inpatients. And the sample in this study was 207 inpatients selected using a simple random sampling technique.

3. Study Variables
Dependent variables in this study are the quality of health services and patient satisfaction.

Independent variables in this study are gender, education level, income, BPJS status (type of payment), inpatient class, and length of stay

4. Operational Definition of Variables
The quality of health services is the patient's assessment of health services in the ward according to the servqual method which consists of physical facilities (tangible), reliability, responsiveness, assurance and empathy.

Patient satisfaction is a patient's feeling of pleasure that comes from a comparison between the services they receive and their expectations.

Gender is a special characteristic that differentiates between male and female individuals.

Educational level is the status of formal education, which is taken through a structured and tiered educational path.

Income is the average fixed income per month in the last six months received by the

patient from both the formal and informal sectors taking into account the Mataram City regional minimum wage (UMR), expressed in rupiah.

BPJS status (type of payment) patient participation in BPJS health financing guarantee.

Inpatient class is a health service class where patients are treated.

Length of stay is the number of days from when the research subject was hospitalized until the time the data was collected.

5. Study Instruments
The data collection technique was carried out using a questionnaire as a research instrument. Collecting data on perceptions of health service quality and patient satisfaction using a structured questionnaire prepared based on Parasuraman's Servqual concept (1985).

6. Data Analysis
1) The model specification describes the relationship between the variables to be studied.
2) Identify the model that is stiffened by the number of measured variables, the number of exogenous variables, endogenous variables, and the variables to be estimated. At this stage, the degree of freedom (df) is calculated to show whether path analysis can be carried out.
3) The suitability of the model is based on tests and checks with the saturation model, namely Chi square has a value of p ≥0.05, CFI, TLI values each have a value of ≥0.90, RMSEA has a value of <0.08, SRMR <0.08
4) Parameter estimation is a causal relationship between variables shown by regression coefficients, both unstandardized and standardized.
5) Model repressification is the final step of the path analysis stage.

7. Research Ethics

This study was approved by the Ethics Committee Medical and Health Research (KEPKK) Faculty of Medicine and Health Sciences, University of Mataram Number: UNRAM2651223.

<div style="background:purple;color:white;text-align:center;">RESULTS</div>

The subjects of this study were 207 people taken from the inpatient wards of four hospitals in Mataram City. The results of variable measurements are presented in the form of univariate, bivariate and multivariate analysis.

1. Univariate Analysis

The results of univariate data analysis are shown in table 1. Table 1 shows the variables from the 207 research respondents, namely the proportion of male respondents (54.6%) is greater than the proportion of female respondents (45.4%). Based on the education level variable, the proportion of respondents with a high education level (53.6%) was greater than the proportion of respondents with a low education level (46.4%). Based on the income variable, the proportion of respondents with low income (56.5%) is greater than the proportion of respondents with high income (43.5%). Based on the BPJS status variable (type of payment), the proportion of respondents with BPJS status (91.8%) is greater than the proportion of respondents with general status (8.2%). Based on the inpatient class variable, the proportion of respondents with inpatient class 2 and class 3 (59.41%) was greater than the proportion of respondents with inpatient class VIP class and class 1 (40.59%). Based on the length of stay variable, the proportion of respondents with a length of stay <4 days (65.70%) was greater than the proportion of respondents with a length of stay ≥4 days (35.30%). Based on the health service quality variable, the proportion of respondents with a perception of good service quality (55.1%) is greater than the proportion of respondents with a perception of poor service quality (44.9%). Based on the patient satisfaction variable, the proportion of respondents with high satisfaction (58.5%) was greater than the proportion of respondents with low satisfaction (41.5%)

Table 1. Description of research variables

Variable	Frequency	Proportion (%)
Gender		
Male	113	54.6%
Female	94	45.4%
Education		
Low	96	46.4%
High	111	53.6%
Income		
Low	117	56.5%
High	90	43.5%
BPJS Status (Type of payment)		
Regular	17	8.2%
BPJS (Insurance)	190	91.8%
Inpatient Class		
Class 2 and Class 3	123	59.4%
VIP Class and Class 1	84	40.6%
The period of inpatient		
<4 Days	136	65.7%
≥4 Days	71	34.3%

Variable	Frequency	Proportion (%)
Quality of Health Services		
Lacking	93	44.9%
Good	114	55.1%
Patient's Satisfaction		
Low	86	41.5%
High	121	58.5%

2. Bivariate Analysis

Table 2 shows the influence of gender, education level, income, BPJS status, inpatient class and patient length of stay on the quality of health services.

The gender variable states that 47 men have the perception that the quality of health services is poor, and 48 women have the perception that the quality of health services is good. The results of the chi square test analysis show that women are 0.743 times more likely to have a good perception of the quality of health services (OR=0.743; p=0.29).

The patient education level variable states that 45 patients with a low level of education have a perception that the quality of health services is poor, and 70 patients with a high level of education have a perception of the quality of health services being good. The results of the chi square test analysis showed that patients with a high level of education were 1,588 times more likely to have a good perception of the quality of health services (OR=1,588; p=0.1).

The patient income variable states that 73 patients with low incomes have a perception that the quality of health services is poor, and 70 patients with high incomes have a perception of the quality of health services being good. The results of the chi square test analysis show that patients with high income are 5,807 times more likely to have a good perception of the quality of health services (OR=5,807; p<0.001).

The BPJS status variable states that 2 general patients have a perception that the quality of health services is poor, and 99 patients with BPJS status have a perception that the quality of health services is good. The results of the chi square test analysis showed that patients with BPJS status were 0.145 times more likely to have a good perception of the quality of health services (OR=0.145; p=0.004).

In the patient inpatient class variable, it was stated that 91 patients treated in classes 2 and 3 had a poor perception of the quality of health services, and 82 patients treated in classes treated in VIP and 1 classes had a good perception of the quality of health services. The results of the chi square test analysis showed that patients treated in classes treated in VIP and 1 classes were 116,954 times more likely to have a good perception of the quality of health services (OR=116,954; p=0.004).

In the patient length of stay variable, it was stated that 52 patients who were treated for <4 days had a poor perception of the quality of health services, and 30 patients who were treated for ≥4 days had a good perception of the quality of health services. The results of the chi square test analysis showed that patients who were treated for ≥4 days were 0.453 times more likely to have a good perception of the quality of health services (OR=0.453; p=0.007).

Table 2. Bivariate analysis of factors influencing the quality of inpatient health services

Independent Variables	Quality of Health Services				Total		OR	p
	Poor		Good					
	N	%	N	%	n	%		
Gender								
Male	47	41.6%	66	58.4%	113	100%	0.743	0.29
Female	46	48.9%	48	51.1%	94	100%		
Education								
Low	45	46.9%	51	53.1%	96	100%	1.588	0.1
High	41	36.9%	70	63.1%	111	100%		
Income								
Low	73	62.4%	44	37.6%	117	100%	5.807	<0.001
High	20	22.2%	70	77.8%	90	100%		
Type of BPJS payment								
Regular	2	11.8%	15	88.2%	17	100%	0.145	0.004
BPJS (Insurance)	91	47.9%	99	52.1%	190	100%		
Inpatient Class								
Class 2 and Class 3	91	74.0%	32	26.0%	123	100%	116.954	<0.001
VIP Class and Class 1	2	2.4%	82	97.6%	84	100%		
Length of stay								
<4 Days	52	38.2%	84	61.8%	136	100%	0.453	0.007
≥4 Days	41	57.7%	30	42.3%	71	100%		

Table 3. Bivariate analysis of factors influencing inpatient satisfaction

Variable	Patient Satisfaction				Total		OR	p
	Low		High					
	N	%	N	%	n	%		
Education								
Low	45	46.9%	51	53.1%	96	100%	1.51	0.148
High	41	36.9%	70	63.1%	111	100%		
Quality of Service								
Lacking	52	38.2%	84	61.8%	136	100%	12.89	<0.001
Good	41	57.7%	30	42.3%	71	100%		

Table 3 shows the influence of education level and perceived quality of health services on patient satisfaction. The patient education level variable stated that 45 patients with a low level of education had low satisfaction, and 70 patients with a high level of education had high satisfaction. The results of the chi square test analysis showed that patients with a high level of education were 1.51 times more likely to have high satisfaction (OR= 1.51; p= 0.148).

The variable perceived quality of health services states that 52 patients with perceptions of the quality of health services who perceive the quality of health services as good have high satisfaction. The results of the chi square test analysis show that patients with a good perception of the quality of health services are 12.89 times more likely to have high satisfaction (OR=12.89; p<0.001).

3. Path Analysis

The path analysis model created by researchers is based on theory and has been checked and analyzed for its suitability to the best variable relationship model (Figure 1).
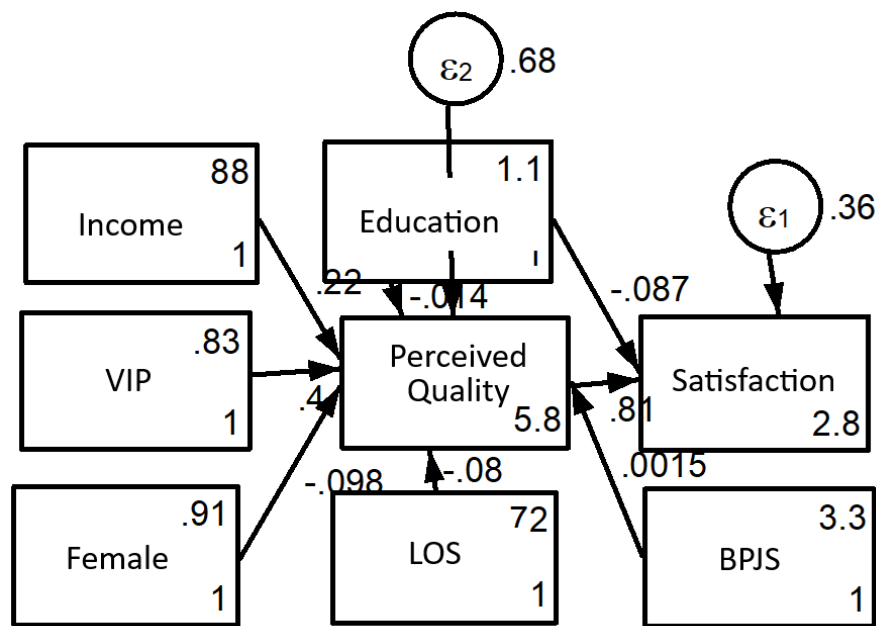
Figure 1 Structural Model of Path Analysis of Variables that Influence the Quality of Health Services and Patient Satisfaction in Hospitals

Table 4. Path analysis of factors that influence perceptions of health service quality and inpatient satisfaction

Dependent Variable	Independent Variable	b	CI 95%		p
			Lower Limit	Upper Limit	
Direct Effects					
Perception of Health Service Quality	←Gender	-0.10	-0.21	0.02	0.090
	←Education level	-0.01	-0.13	0.10	0.819
	←Income	0.22	0.09	0.35	0.001
	←BPJS Status (Payment Type)	-0.08	-0.19	0.03	0.167
	←Inpatient Class	0.40	0.28	0.52	<0.001
	←Length of Hospitalization	-0.08	-0.19	0.03	0.167
Indirect Effects					
Patient Satisfaction	←Perception of Health Service Quality	0.81	0.76	0.86	<0.001
	←Education level	-0.08	-0.17	0.003	0.040

N observation= 207
dF= 20
AIC= 3263.772
BIC= 3303.765

Figure 1 presents the results of path analysis regarding factors that influence service quality and patient satisfaction in hospitals.

Figure 1 shows that service quality is significantly influenced by income factors and inpatient room class. There is a positive influence on patient income on service quality,

and this influence is statistically significant. Patients with high incomes on average rated the quality of health care received 0.22 units higher than those with low incomes (b= 0.22; 95% CI= 0.09 to 0.35; p= 0.001). There is a positive influence of VIP class on service quality, and this influence is statistically significant. Inpatients treated in the VIP class received an average of 0.40 units higher quality of health services than those treated in the non-VIP class (b= 0.40; 95% CI= 0.28 to 0.52; p <0.001).

Service quality is not significantly influenced by the factors gender, education, BPJS status, and length of stay. There are differences in the assessment of the quality of health services received by female patients and male patients, although these differences are only close to significant. Female patients on average rated the quality of service received 0.10 units lower than male patients (b= -0.10; 95% CI= -0.21 to 0.02; p= 0.090). There is a difference in the assessment of the quality of health services between patients with more than high school education and less than high school education, but this difference is not statistically significant (b= -0.01; 95% CI = -0.13 to 0.10; p= 0.819). There is a difference in the assessment of the quality of health services between BPJS status patients and direct payment patients, but statistically this difference is not significant (b= -0.08; 95% CI= -0.19 to 0.03; p= 0.167). There was a difference in the assessment of the quality of health services between patients treated ≥4 days and <4 days, but this difference was not statistically significant (b= -0.08; 95% CI= -0.19 to 0.03; p= 0.167).

Figure 1 shows that there is a positive influence on assessing the quality of health services received and patient satisfaction, and this influence is statistically significant. Every 1 unit increase in health service quality score will be followed by an increase in patient satisfaction level of 0.81 units (b = 0.81; 95% CI = 0.76 to 0.86; p <0.001). There is an influence of education level and patient satisfaction, and this influence is statistically significant. Inpatients with more than high school education experienced an average increase in satisfaction of 0.08 units higher than inpatients with less than high school education (b= -0.08; 95% CI = -0.17 to -0.003; p = 0.04).

The path analysis model (Figure 1) showed good model fit, according to several indicators of model fit. p= 0.129. RMSEA= 0.059 <0.08. CFI= 0.99 > 0.90. TLI= 0.97 >0.90. SRMR= 0.019 <0.08.

DISCUSSION
1. Gender and Service Quality
In this study, it was found that there were differences in the assessment of the quality of health services received by female patients and male patients. Female patients on average rated the quality of service received as lower than male patients, and conversely male patients on average rated the quality of service received as higher than female patients.

This research is in line with Budiman's (2014), which states that gender has an influence on views of the services provided. A person with male gender has greater demands for service quality than someone with female gender (Budiman, 2014). Most men are heads of families so they have a lot of experience to distinguish quality services (Romliyadi & Isrizal, 2020)

2. Education Level and Service Quality
In this study, it was found that there were differences in the assessment of the quality of health services between patients with different levels of education. Patients with a high level of education assess the quality of service they receive higher than patients with a low level of education.

This research is in line with Abraham et al. (2015) which states that one of the factors

that influences the quality of health services is patient education (Abraham, et al., 2015). The increasingly improving level of public education gives rise to a tendency to demand better and faster quality public services (Rahmadianti, 2020)

3. Income and Service Quality

In this study, it was found that there was a positive influence on patient income on service quality. Patients with high incomes rated the quality of health care higher on average than patients with low incomes.

This research is in line with the research results of Zun et al. (2018) who revealed that patients with low income are an influential factor in determining the level of satisfaction with the quality of patient health services. This is because groups with low incomes are more easily satisfied with the quality of services they receive (Zun, et al., 2018). One of the socio-demographic factors that greatly influences patient satisfaction with the quality of nursing care is the patient's economic status (Abraham et al., 2015).

4. BPJS Status and Service Quality

In this study, it was found that there was a difference in the assessment of the quality of health services between patients using BPJS and patients paying directly. Patients who use BPJS assess the quality of health services higher than patients who pay directly.

This research is in line with the results of research by Djafar et al (2023) which revealed that patients participating in BPJS, especially recipients of contribution fees, tend to rate the quality of service as higher. This is because patients still receive good services from nurses, doctors and pharmacists in accordance with standard operational procedures, even though patients do not pay for these services (Djafar, et al., 2023).

National Health Insurance (JKN) patient satisfaction in hospitals is greatly influenced by the quality of the health

services provided. which consists of tangible, reliability, responsiveness, assurance and empathy dimensions (Anelia & Modjo, 2023).

5. Inpatient Class and Service Quality

In this study, it was found that there was a positive influence on the patient's inpatient class on the quality of service. Inpatients treated in the VIP class on average receive a higher quality of service than patients treated in the non-VIP class.

This research is in line with the results of Kurniawan's (2014) research which revealed that VIP class inpatients rated the quality of service as higher. This is because the VIP inpatient room is facilitated with above standard facilities, a cleaner room with more privacy and more exclusive services (Kurniawan & Susanto, 2014).

6. Length of Hospitalization and Quality of Service

In this study, it was found that there were differences in the assessment of the quality of health services between the patients being treated. Patients who are hospitalized longer receive lower quality of service than patients who are hospitalized sooner. On the other hand, patients who are hospitalized more quickly receive a higher quality of service than patients who are hospitalized longer.

This research is in line with the results of research by Hutahaean (2022) which revealed that the length of patient treatment can influence patient perceptions, patients with short treatment times tend to feel more satisfied with the services provided and conversely, patients with long treatment times tend to feel less satisfied. on the services provided. This is due to the tendency of more patients to want to go home immediately after feeling better to be reunited with their families. The patient's perception of his condition recovering quickly after receiving treatment is an assessment of the health

services received as good (Hutahaean & Nababan, 2022).

7. Patient Education and Satisfaction

In this study, it was found that there was an influence on the level of education and patient satisfaction. Patients with a higher level of education on average experienced increased satisfaction than inpatients with lower education.

This research is in line with Muzer et al. (2020) which states that the level of education has a significant effect on the level of patient satisfaction. The higher the level of patient education, the better the level of patient satisfaction (Muzer, et al., 2020). Education can influence a person's lifestyle, especially in motivation for attitudes to play a role in development. In general, the higher a person's education, the easier it is to receive information. Someone who is highly educated will easily analyze situations and anticipate mistakes. The education experienced by an individual will cause the individual to have a lot of knowledge, experience and a strong mental attitude. The knowledge, experience and mental attitude obtained will influence behavior patterns and attitudes. This can explain that patients with higher education ratings have a higher level of satisfaction than patients with low education (Darsini, et al., 2019).

8. Quality of Health Services and Patient Satisfaction

In this study, it was found that there was a positive influence on assessing the quality of health services received and patient satisfaction. Increasing the quality of health services will be followed by an increase in the level of patient satisfaction.

This research is in line with the results of research by Novel et al (2018) which revealed that the quality of health services has the most significant influence on patient satisfaction in hospitals. Patient expectations regarding the quality of health services are

closely related to assessment. The better the quality of health services provided to patients, the greater the satisfaction felt by the patient. Good quality hospital health services will provide satisfaction to patients thereby forming a good image of the hospital. Patients will choose hospitals that have a good image and can be trusted to obtain health services (Novela, et al., 2018)

Patient satisfaction is defined as the customer's response to the discrepancy between the previous level of interest and the actual performance felt after use. Customer or patient satisfaction is the core of patient-oriented marketing. Satisfactory and quality service will form patient loyalty and satisfaction (Kuntoro & Istiono, 2017).

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