



Effects of Service Quality and Patient Satisfaction on Patient Adherence at the Outpatient Rehabilitation Department of Fatmawati National Hospital in Jakarta

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Abstract

Introductions: The quality of services and patient satisfaction play an important role in increasing patient adherence. Fatmawati hospital is the national tertiary hospital in Indonesia that has a rehabilitation outpatient department as one of its excellent services. The rehabilitation outpatient department deals with patients that have chronic diseases. Many studies reported that patients with chronic disease verge on having less satisfaction and adherence. Meanwhile, patient satisfaction is used to evaluate health providers' quality. Therefore, this research intended to assess the effect of rehabilitation outpatient service quality and patient satisfaction on patient adherence at Fatmawati hospital.

Methods: Cross-sectional study was conducted from December 2021 – to February 2022. Two hundred patients were included with a convenient sampling method. SPSS 25 Software was run to analyze the pilot study data, descriptive statistics, and multivariate regression.

Results: According to the finding of this study, most patients had a positive experience in terms of service quality and patient satisfaction. As a result, it has a significant and positive effect on patient adherence. The structural equation $Y = 7,502 + 0,211(X1) + 0,822(X2)$ represents if service quality and patient satisfaction are equal to zero or constant, then patient adherence has a value of 7,502 units. If the quality of service were increased by one unit, the other variable equal to zero and constant, the value of patient adherence would increase by 0,211. On the other hand, patient adherence will be increased by 0,822 units when one unit increases patient satisfaction.

Conclusion: The results suggest that improving service quality and patient satisfaction is an effective strategy for health providers in improving patient adherence in the rehabilitation outpatient department.

Key Words: Service Quality, Patient Satisfaction, Patient Adherence, Rehabilitation Outpatient Department, Tertiary Hospital.

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Introduction

As the national central public hospital, Fatmawati hospital has an outpatient rehabilitation department consisting of many services such as physical medicine and rehabilitation (PMR), physiotherapy, occupational therapy, speech

therapy, and orthotic prosthetic. Rehabilitation is one of the healthcare services associated with people who have physical impairment or disability due to chronic diseases such as stroke, cerebral palsy, spinal cord injury, etc.

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Patient adherence is the factor that influences therapeutic outcomes [1][2]. Moreover, poor patient adherence also negatively affects medical expenses [3]. Many terms describe how patients obey the treatment, including compliance, adherence, concordance, conformity, etc.[4]. In this study, the term adherence will be used since it is suitable with the meaning and its relations with the relation with other variables. Adherence is the behavior of a patient that is active in following the treatment program and health professional. Patients who adhere to the treatment program get better results than those who do not, especially for treating chronic diseases that take a long time [5].

Several studies showed factors that influence patient adherence [6][7]. Intrapersonal factors are disability, motivation, age, fear, failure, and forgetfulness. Moreover, interpersonal factors are social support, the health provider and health professional, and the other factors such as economy, transportation, environment, level of education, and marital status. WHO, 2003 recommends five dimensions: factors related to the system, conditions-related factors, therapy factors, socio-economic factors, and factors related to patients[8]. The concept of adherence in rehabilitation is multidimensional; adherence can be in attendance, hearing input, following prescribed exercises, and following the exercise home program well.

The quality of services is the main determinant of patient satisfaction[9]. Most studies suggested that quality service and patient satisfaction as determinants of patient adherence [10] [11]. However, patient adherence and patient satisfaction can affect each other. Good communication skills to deliver information to the patient is the main factor that initiates the patient-healthcare professional relationship; as a result, the patient will follow the advice from the health professional[12]. Patients with chronic diseases have less satisfaction with healthcare services[13] [11]. Thus, less satisfaction will impact patient adherence to the program because the patient isn't motivated to follow the program.

Several studies reported that patients with chronic disease do not return at follow-up on outpatient service [14] [5]. In cases of medical rehabilitation services, if the treatment results are ineffective, it might cause impairment and worsen to become disability; consequently, the patient is not productive, which may affect income source loss. Therefore, it is important to conduct a study on patient adherence in tertiary hospitals, especially

outpatient rehabilitation departments, because most patients are under national health coverage with prologue treatments.

From the pilot and literature study, there has never been a study on the evaluation of service quality and patient satisfaction on patient adherence in outpatient rehabilitation services in Indonesia's national central public hospital, notably at Fatmawati Hospital. This cross-sectional study aimed to assess the impact of quality service and patient satisfaction on patient adherence.

Hypothesis

1. Quality service has a positive and significant impact on patient adherence at the rehabilitation outpatient department at Fatmawati national central public hospital.
2. Patient satisfaction has a positive and significant impact on patient adherence in the rehabilitation outpatient department at Fatmawati national central public hospital.

Methods

Ethical Consideration

This research was reviewed and approved by Institutional Review Board, Faculty of Public Health, Hasanuddin University, Makassar, Indonesia, and the Ethical board of Fatmawati National Central Public Hospital, Jakarta, Indonesia. This study was conducted in Rehabilitation Outpatient services, Fatmawati hospital. The respondents provided their informed consent to participate in this study.

Study Design

The cross-sectional study was conducted in rehabilitation outpatient departments in December 2021- and February 2022.

The respondents were recruited from; PMR, Physiotherapy, Occupational Therapy, Speech Therapy, and Orthotic Prosthetic. A pilot study was conducted before to test the validity and reliability of the questionnaires. The respondents completed a self-administered questionnaire consisting of demographic profile, clinical information, 22 questions on quality services, nine questions on patient satisfaction, and 14 questions on patient adherence. The question items were read as printed on the questionnaire for illiterate and respondents who need assistance.



Setting and Subjects

This study was conducted during the pandemic of Covid-19, which caused a decrease in patients. Non – probability (convenience or accidental sampling) with the inclusive criteria was performed to see the nature of the respondent's appointment adherence in Rehabilitation Outpatient Services six months prior. The sample size was determined based on the formula of cross-sectional sampling size with provided population number; this study needs a minimum of 167 respondents. The respondents were either patients or family/caregivers if they were dependent. Two hundred thirteen respondents participated, but only 200 data were qualified because the patient did not fill out the questionnaires and did not return the questionnaires.

$$n = \frac{[(1.96) (1.96)] \cdot 0.5 (1 - 0.5) \cdot 296}{[(0.05)(0.05)](362 - 1) + [(1.96)(1.96) \cdot 0.5(1 - 0.5)]}$$

n = 167

Statistical Analysis

Statistical analysis was using IBM SPSS Statistic 25. A prior study with 30 respondents was conducted to test the questionnaire's validity and reliability. Descriptive data were presented in the form of a number (percentage) for categorical data. The classical assumption: normality test, multicollinearity test, heteroscedasticity test, autocorrelation test was conducted, then the impact of variable quality service and patient satisfaction toward patient adherence was analyzed with multiple linear regression and continued with F- test and T-test.

$$n = \frac{Z^2_{1-\alpha/2} p (1-p) N}{d^2(N-1) + Z^2_{1-\alpha/2} p (1-p)}$$

Results

Table 1. Validity and Reliability Test

Variables	Dimension	Item Number	r is	r- table 5%(n=30)	Description	Cronbach's Alpha (α) values	Description
Quality of Service	Reliability	X1	0,668	0,361	Valid	0.897	reliable
		X2	0,657	0,361	Valid		
		X3	0,695	0,361	Valid		
		X4	0,745	0,361	Valid		
		X5	0,744	0,361	Valid		
	Assurance	X6	0,622	0,361	Valid		
		X7	0,381	0,361	Valid		
		X8	0,682	0,361	Valid		
		X9	0,388	0,361	Valid		
		X10	0,477	0,361	Valid		
	Tangible	X11	0,687	0,361	Valid		
		X12	0,598	0,361	Valid		
		X13	0,380	0,361	Valid		
		X14	0,367	0,361	Valid		
		X15	0,377	0,361	Valid		
		X16	0,508	0,361	Valid		
		X17	0,655	0,361	Valid		
	Empathy	X18	0,680	0,361	Valid		
		X19	0,377	0,361	Valid		
		X20	0,578	0,361	Valid		
		X21	0,555	0,361	Valid		
		X22	0,619	0,361	Valid		
Patient Satisfaction	Characteristics of healthcare professional	Y1	0,801	0,361	Valid	0.896	reliable
		Y2	0,732	0,361	Valid		
		Y3	0,803	0,361	Valid		
		Y4	0,817	0,361	Valid		
	Treatment process	Y5	0,696	0,361	Valid		
		Y6	0,811	0,361	Valid		
	Organization of care	Y7	0,734	0,361	Valid		
		Y8	0,608	0,361	Valid		
		Y9	0,680	0,361	Valid		
Patient Adherence	Family support	Z1	0,722	0,361	Valid	0.870	reliable
		Z2	0,657	0,361	Valid		
		Z3	0,468	0,361	Valid		
	Healthcare professional	Z4	0,636	0,361	Valid		
		Z5	0,618	0,361	Valid		
		Z6	0,597	0,361	Valid		
		Z7	0,600	0,361	Valid		
		Z8	0,694	0,361	Valid		
	Personal	Z9	0,578	0,361	Valid		
		Z10	0,541	0,361	Valid		
		Z11	0,603	0,361	Valid		
		Z12	0,698	0,361	Valid		
		Z13	0,637	0,361	Valid		
		Z14	0,562	0,361	Valid		

Source: Processed primary data (2022)



Table 1 describes the results of validity and reliability of each question and variable. Twenty-two questions under the service quality variable were valid and reliable. All the r-score was above r-table 5% (0.361), while Cronbach's alpha was 0.897(p<0.00). Nine questions under the patient satisfaction variable were valid and reliable.

All the r-score was above 0.600 and higher than r-table 5% (0.361), while Cronbach's alpha was 0.896 (p<0.00). Moreover, fourteen questions on patient adherence were valid in which the r-scores were above 0.500 and higher than r-the table with Cronbach's alpha was 0.870 (p<0.00).

Table 2. Descriptive Tables of Demographic Variables

Individual-level variables		Frequency	
		n	%
1	Respondent		
	Patient	66	33
	Father/Mother/Child	94	47
	Spouse	34	17
	Other	6	3
	Total	200	100
2	Gender		
	Male	47	23,5
	Female	153	76,5
	Total	200	100
3	Age		
	16- 25year old	19	9,5
	26-45year old	91	45,5
	46- 60year old	49	24,5
	>60year old	41	20,5
	Total	200	100
6	Diagnoses		
	Neurology	83	41,5
	Musculoskeletal	56	28
	Paediatric	61	30,5
	Total	200	100
9	Level of education		
	Primary School	23	11,5
	Secondary school/Diploma	102	51
	Bachelor /Magister/Doctoral	75	37,5
	Total	200	100
10	Occupation		
	University Student	10	5
	Civil servant/Government staff	39	19,5
	Private sector employee/	59	29,5
	Housewife/not working/others	92	46
	Total	200	100
11	Payment		
	BPJS (fully funded by the Government) *	75	37,5
	BPJS (private)*	78	39
	BPJS (civil servant/government staff) *	42	21
	Others	5	2,5
	Total	200	100
16	Missing appointment (last six months)		
	Absence	30	15
	Appointment adherence	170	85
	Total	200	100

Source: Processed primary data (2022)

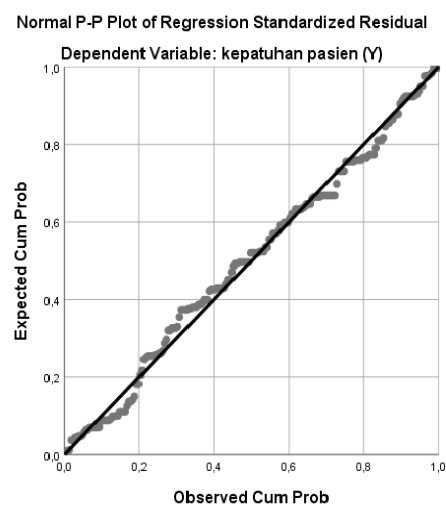
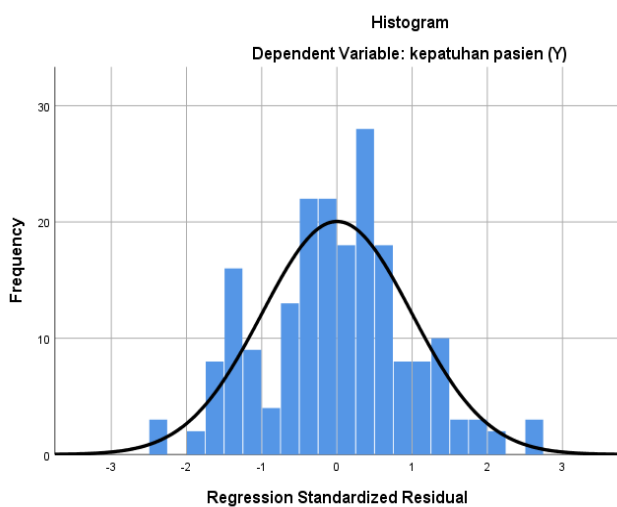
*bpjs: Indonesia health national coverage program (insurance)



This study included 200 respondents into this study. Table 2 describes the demographic of respondents. The participants were patient 66 (33%), family 128 (64%), and other 6 (3%). Out of 200, female 153 (76.5%) and male 47 (23.5%). The distribution of age groups was classified into four categories 16–25 year-old 19 (9.5%), 26-45year old 91(45.5%), 46-60 year old (24.5%) and above >60year old 41 (20.5%). Three main diagnoses were neurology disease 83 (41.5%), musculoskeletal 56 (28%), pediatric 61 (30.5%). Moreover, the level of education was under senior high school 23 (11.5%), senior high school and diploma 102 (51%),

university degree 75 (37.5%). The distribution of method of payment (three type of national coverage; fully funded by government 75 (37.5%), private 78 (39%), government staff 42 (21%)) and other 5 (2.5%). The distribution of respondent’s occupation was university students 10 (5%), government staff 39 (19.5%), private sector employee 59 (29.5%), housewife/not employed 92 (46%). The distribution of missing appointments in the last six months was absent 30 (15%), and there was no missing appointment 170 (85%).

Graphics 1 and 2



Source: Processed primary data (2022)

Graphics 1 and 2 histogram and normal p-plot show the normal distribution by the bell-shaped skewed symmetrically, and the plot scatters following the linear line. One-sample Kolmogorov-Smirnov test was conducted with the result ($p=0.056>0.05$) to confirm that the data were distributed normally. A multicollinearity test was performed to determine the existence of a high correlation between variables in multiple regression.

Table 3. Multicollinearity test: VIF-Multicollinearity test

Model	Tolerance	VIF
Quality of Service	0,476	2,101
Patient Satisfaction	0,476	2,101

Source: Processed primary data (2022).

Table 3 shows the VIF of quality service and patient satisfaction was $2.101 < 10$ and tolerance $0.476 > 0.1$; it can be concluded that there is no multicollinearity

in all the independent variables. A heteroscedasticity test was analyzed to confirm residual variance inequality in the regression model from one observation to another.

Table 4. Heteroscedasticity (Glejser Test)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error			
1	(Constant)	7.031	1.604		4.383	.000
	Quality Services	.007	.024	-.028	-.276	.783
	Patient Satisfaction	.066	.057	-.119	-1.162	.247

Source: Processed primary data (2022)



Table 5. Heteroscedasticity (Spearman Rank)

			abs	Quality of Service	Patient Satisfaction
Spearman's rho	abs	Correlation Coefficient	1,000	-,095	-,099
		Sig. (2-tailed)	.	,179	,165
		N	200	200	200
	Quality of Service	Correlation Coefficient	-,095	1,000	,685**
		Sig. (2-tailed)	,179	.	,000
		N	200	200	200
	Patient Satisfaction	Correlation Coefficient	-,099	,685**	1,000
		Sig. (2-tailed)	,165	,000	.
		N	200	200	200

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Processed primary data (2022)

Table 6. Autocorrelation test (Run Test)

Runs Test	
	Unstandardized Residual
Test Value	,26827
Cases < Test Value	99
Cases >= Test Value	101
Total Cases	200
Number of Runs	111
Z	1,419
Asymp. Sig. (2-tailed)	,156
a. Median	

Source: Processed primary data (2022)

Table 4 shows the result of Glejser test, no heteroscedasticity was found in independent variables, quality services ($p = 0.783 > 0.05$), patient satisfaction ($p = 0.247 > 0.05$). In addition, the Spearman rank test also was conducted to emphasize the founding of heteroscedasticity, quality services ($p = 0.179 > 0.05$), and patient satisfaction ($p = 0.165 > 0.05$) (table 5). The autocorrelation test determines if there is a linear relationship between the errors on a series of observations, sorted by time. The run test was performed, and the result ($p = 0.156 > 0.05$) in which there was no autocorrelation positive or negative (table 6).

432

Table 7. Multiple Linear Regression Analysis Coefficient

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	7,502	2,597		2,889	,004		
	Quality of service	0,211	,039	,327	5,382	,000	,476	2,101
	Patient Satisfaction	0,822	,092	,540	8,899	,000	,476	2,101

Dependent Variable: Patient adherence
 Source: Processed primary data (2022)

Table 7 describes the result of multiple linear regression, B coefficient for constant 7.502 with the structural equation $Y = 7.502 + 0.211X_1 + 0.822X_2$.

1. If the score of variables in research is zero or constant, patient adherence will value by 7.502 units.

- The variable coefficient in quality services is 0.211 units, meaning if the other variable in the research is zero or constant, patient adherence will increase by 0.211 points.
- The variable coefficient in patient satisfaction is 0.822 units, meaning if the variable in the research is zero or constant, patient adherence will increase by 0.822 units.



Table 8. Coefficient of Determination Test

Model	R	R Square	Adjusted R Square
1	0,809 ^a	0,654	0,651
a. Predictors: (Constant), Patient Satisfaction, quality of service			
b. Dependent Variable: patient adherence			

Source: Processed primary data (2022)

Table 8 describes the coefficient of determination with the r square test; the adjusted r square was 0.651. It means the impact of patient satisfaction and quality services is 0.651 or 65.1% on patient adherence, and the other variables can explain the remaining 34.9%, not in this research.

Table 9. F-test (Anova Test)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10106,27	2	5053,14	186,468	,000^b
	Residual	5338,528	19	27,099		
	Total	15444,755	19			
a. Dependent Variable: Patient adherence						
b. Predictors: (Constant): Patient Satisfaction, Quality of Services						

Source: Processed primary data (2022)

Table 9 shows the ANOVA test (F-test) that (p<0.05), meaning quality services and patient satisfaction, have a significant positive impact on patient adherence.

Table 10. T-test (Hypothesis test)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error				Beta	Tolerance
1	(Constant)	7,502	2,597		2,889	,004		
	Quality of service	,211	,039	,327	5,382	,000	,476	2,101
	Patient satisfaction	,822	,092	,540	8,899	,000	,476	2,101
a. Dependent Variable: Patient adherence								

Source: Processed primary data (2022)

Table 10 describes the impact of quality services on patient adherence with a t-test, the result t score (5.382) > t table (1.973) dan (p <0.05); as a result, the hypothesis was approved that quality service has a significant and positive impact on patient adherence. Moreover, the t score (8.899) > t table (1.973) and (p< 0.05) so that a satisfied patient has a positive and significant impact on patient adherence.

Discussion

Adequate evidence from the literature reported the effect of service quality on patient satisfaction. Hospitals or health providers use patient satisfaction to evaluate service quality. Patient satisfaction is a primary indicator of healthcare quality in outpatient departments [9]. Higher service quality will lead to higher patient satisfaction; thus, improving the quality of service is an effective strategy to increase patient satisfaction [15]. Several studies stated that these variables might increase patient adherence [16] [17] [18] [19] [20].

This research determines service quality and patient satisfaction impact patient adherence in the rehabilitation outpatient department. Multiple linear regression determines the linear relationship between a dependent variable and more than one independent variable by calculating coefficients for a straight-line equation. Moreover, the classical assumption test was requisite before conducting multiple linear regression. The classical assumption tests include normality, multicollinearity, heteroscedasticity, and autocorrelation [21]. The finding result was no violations of the classical assumptions.

Estimation of the parameter multiple regression was $Y = 7,502 + 0,211X_1 + 0,822X_2$ with r-square was 0,651. It means service quality and patient satisfaction distributed 65,1 % on patient adherence while the rest, 34,9 %, can be explained by other variables. The result showed that hypotheses were accepted. Quality service and patient satisfaction positively and significantly affect patient adherence. The quality of health services and patient satisfaction greatly improve patient adherence. The patient–health professional is often recommended as the bottom line in the promotion of adherence. However, if patients feel that they are not being served professionally, under-served time, long waiting times, and lack of information or education, it will lead to non-adherence. The communication



gap is the most reported as the main reason [1]. For instance, patients feel that they are not appreciated, or the professional healthcare did not serve them professionally. Moreover, unclear instruction or failure to explain the treatment may cause to non – adherence unintentionally.

In the case of cerebral palsy, it has been reported that therapeutic sessions, competency, communication, sufficient knowledge, empathy, and patience were the determinants of patient adherence. In addition, the physical environment, including equipment and facilities, becomes an important factor in increasing family trust and adherence [22].

Many studies reported that higher patient satisfaction is associated with better adherence and a greater success rate of treatment [23][24]. Mostly, a satisfied patient is feasible actively to participate in the treatment. On the other hand, the dissatisfied patient might not return [11]. In addition, low satisfaction during the healing process is the main obstacle that causes non-adherence in patients [24]. Therefore, health care providers are very important to assess patient satisfaction to evaluate the services provided [25] and the effectiveness of patient treatment. Furthermore, the association between adherence and patient characteristics is equivocal and uncertain[1] [7]. Hence, further analysis should be considered as cofounding or estimation parameters.

Conclusion

This study evaluated the effect of service quality and patient satisfaction on patient adherence in rehabilitation outpatient departments in a national tertiary hospital. The result could help the healthcare provider better understand the relationship between service quality, patient satisfaction, patient adherence, and the mechanism for increasing patient adherence. According to the findings, most patients have a positive experience in outpatient rehabilitation services; service quality was good and satisfying. Besides, patients adhere to attending the treatment program. The results recommend that improving the quality of service and patient satisfaction could be considered effective strategies for the Fatmawati Hospital or the Ministry of Health of Republic Indonesia to increase patient adherence.

Indication for Further Research

This research is a quantitative study limited to the

depth exploration of three variables. Semi-quantitative research is suggested to be conducted for future research. Further analysis needs to be conducted to assess whether each dimension of service quality and patient satisfaction significantly impacts patient adherence. Furthermore, the characteristic of respondents should be analyzed to determine whether these variables could make distortion (cofounding) in estimating the parameter.

Conflict of Interest

No conflicts of interest in this research.

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