INFLUENCE OF MEDICAL EXAMINATION AND TREATMENT'S SERVICE QUALITY ON OUTPATIENTS' SATISFACTION

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Abstract: ***In many organizations, especially those dealing with services, customer satisfaction is considered a challenge (Pula, 2022). The study is grounded in the previous studies on customer satisfaction and service quality. The purpose of this study is to examine the relationship between medical examination, treatment's service quality at Bach Mai Hospital, and outpatients' satisfaction. Between April and June 2023, the outpatients in Bach Mai Hospital will be surveyed. There were 327 respondents in the data collection, based on exploratory factor analysis, linear regression, and scale reliability analysis. According to the study, outpatients' satisfaction, medical examinations, and treatment's service quality at Bach Mai Hospital are positively correlated. The effects of the medical examination and treatment's service quality at the component level, however, vary. The findings of the study imply that outpatients should choose hospitals that provide high-quality services. There are some suggestions on how to enhance the caliber of their services and the growth of this industry in Vietnam. The study advances our knowledge of Bach Mai Hospital's levels of service quality.***

• Keywords: *outpatients' satisfaction, service quality, medical examination, treatment, business administration, Bach Mai Hospital.*

JEL codes: C52, L81, L83, F66, J01, O15

Date of receipt: 14th Nov., 2024
Date of delivery revision: 28th Nov., 2024
Date of receipt revision: 10th Dec., 2024
Date of approval: 02th Jan., 2025
DOI: https://doi.org/10.71374/jfar.v25.i1.10

1. Introduction

Medical personnel used to view patients as individuals who were requesting care and hoping for the doctor's goodwill. Bad things occur as a result of that awareness. If we continue to believe that the sick is the one requesting therapy, then there will still be a great deal of unfairness and even injustice.

If patients are perceived as customers, the behavior of not only doctors but also all medical staff must change. When understanding the needs and desires of patients, the hospital board of directors will have plans and solutions to improve quality and serve patients better.

As a complete special-class general hospital at the end of the country, Bach Mai Hospital's patient source is therefore abundant from all over the country. However, in Hanoi, there are also many good specialized public hospitals, such as K Hospital, Central Obstetrics Hospital, Hanoi Heart Hospital, Hanoi Kidney Hospital, etc., attracting many patients to visit. and treatment with professional quality and very good service. Faced with such high competition from surrounding hospitals, Bach Mai Hospital, which is a large public hospital with nearly 120 years of establishment and development, is considered a cumbersome machine and very difficult to change. But faced with the problem of how to retain not only customers but also high-quality medical staff working at the hospital, the only way to do that is to improve patient satisfaction. diseases, attracting many patients to come for examination and treatment, ensuring hospital revenue and medical staff income.

There are many factors that affect patient satisfaction, such as the attitude of medical staff, price, convenience, utilities, accompanying services, etc., during the medical examination and treatment process. Bach Mai Hospital is gradually making changes to best meet the wishes of patients, with the goal of providing treatment for 8,000-10,000 outpatient visits per day. This is a number that can be considered large for a public health facility, but with the determination of the hospital's board of directors as well as the consensus to change all officials and employees of Bach Mai Hospital, the goal will soon be achieved.

The objective of this study is to evaluate and measure the quality of medical examination and

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treatment services at Bach Mai Hospital and the impact of the quality of medical examination and treatment services at Bach Mai Hospital on patient satisfaction. From there, the study presents recommendations that help the hospital leadership have policies and solutions to improve service quality, increase patient satisfaction, and attract more and more people to the hospital for examinations and treatments, ensuring the hospital's revenue as well as the income of medical staff.

2. Literature review

2.1. Quality of medical examination and treatment services

We are aware that medical services are a unique category of services with unique requirements. There is still disagreement over the best way to quantify the quality of health services, and there is currently no agreed-upon definition of what constitutes high-quality health care. Still, there are a few very broad and widely accepted definitions of medical services:

Nguyen (2022) asserts that a high-quality medical service should satisfy the patient's needs while maximizing the provider's efficiency. The patient must always come first in quality medical care, and the environment in which patients receive and use care must be conducive to their ease of access and well-being. Appropriate treatment plans and methods, together with the knowledge patients need to comprehend their health. The most crucial thing about medical services is that they should prevent people from falling into poverty due to medical expenses and help patients recover their health under the finest possible medical examination and treatment settings.

2.2. Influence of medical examination and treatment's service quality on outpatients' satisfaction

Baxter (2004) used the SERVQUAL model to evaluate the quality of medical services in Nottingham and affirmed that the five components of the SERVQUAL model are the standard for measuring the quality of medical services. The study showed that patients' perceptions and expectations were not significantly different; however, the actual quality of medical services provided did not meet their expectations. The perceived importance of the five components of healthcare service quality is as follows: Reliability and assurance are considered the most important, followed by responsiveness and empathy, and lastly, tangibility.

Pham and Phung (2011) surveyed 457 outpatients at three hospitals in Ho Chi Minh City, including Nguyen Tri Phuong Hospital, Van Hanh General Hospital, and Medic Medical Diagnostic Center. The authors used the SERVQUAL model and developed seven factors that affect patient satisfaction, including hospital facilities and environment, operational capacity of medical staff, results of medical examination and treatment results, hospital service attention, medical examination and treatment time, reliability, and medical examination and treatment costs. The results show that there are 5 factors that affect the satisfaction of outpatients, of which 4 factors have a positive impact in order from strong to weak: (i) medical examination and treatment results; (ii) the working capacity of doctors and nurses; (iii) the hospital's facilities and environment; (iv) the hospital's attention to service; and (v) time for medical examination and treatment has a negative impact on outpatient satisfaction.

Mishra and Gupta (2014) affirmed that the attitude of the medical team is the most important factor affecting patient satisfaction. For doctors, it is a dedicated attitude when explaining to patients about the disease and treatment methods; for nurses, it is the attitude of welcoming and cooperating in treating patients. Besides, research also shows that "food quality," "environmental hygiene," "clinical quality," and "clarity of rules and regulations in the hospital" have a positive influence on patient satisfaction (Mishra and Gupta (2014).

Alghamdi (2014) used the SERVQUAL model with five components to evaluate the impact of medical service quality on patient satisfaction at government hospitals in southern Saudi Arabia. The author conducted the study from February 2013 to August 2013. The study sample consisted of 183 patients aged 18–61 years old. Research results show that the quality of medical services significantly affects patient satisfaction, with "empathy" having the greatest influence, followed by "tangibles" and "ability to respond," and finally "reliability" and "assurance.". Research also shows that when healthcare providers care for patients, especially when they are attentive and willing to help, patients feel more satisfied.

Nguyen (2022) uses the theoretical model SERVQUAL (Parasuraman et al., 1988) and the empirical model KQCAH including reliability, responsiveness and conformity, attention to attention and care, efficiency, and tangible means,

to evaluate the impact of medical service quality on patient satisfaction at public hospitals in Vietnam. Research results show that care and attention are the most important and decisive factors affecting patient satisfaction.

The theory of satisfaction suggests five components in the SERVQUAL model that are related to clients' satisfaction with service quality (Do et al., 2023).

Thus, the above studies all use the SERVQUAL model, which includes five components: reliability, assurance, responsiveness, empathy, and tangibles, which are components of medical service quality, to evaluate the quality of medical services that affect patient satisfaction. In the medical context, the components of the SERVQUAL model are explained as follows:

Reliability: The reliability of the patient or family member in the medical services provided by the medical facility;

Assurance: The results that patients expect to receive when participating in medical services;

Responsiveness: The technical facilities and professionalism of medical staff meet the needs of patients.

Empathy is the concern, care, and understanding from the medical staff towards the patient.

Tangibility: Is the infrastructure and equipment used in medical services? It also affects the clothing and appearance of medical staff.

3. Methodology

3.1. Research procedures and samples

To measure the impact of medical service quality on outpatient satisfaction with the quality of medical examination and treatment services at Bach Mai Hospital, we carry out a research process with the following steps: desk research, preliminary quantitative research, and formal quantitative research.

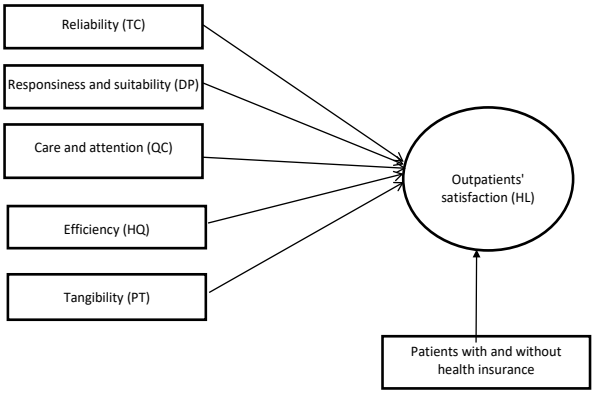
We conduct an overview of previous research works related to the research topic, find out in what aspects this topic has been studied, how to use research methods, what are the main results of the studies, and limitations of previous studies to determine the goals for further research. The results of this stage are to choose a research direction, clarify the components of medical examination and treatment service quality, and examine the influence of medical examination and treatment service quality on patient satisfaction when participating in medical examination and treatment. From there, build a research model.

Preliminary quantitative research was conducted with 100 outpatients visiting the Department of On-Demand Examination and Treatment at Bach Mai Hospital through the survey method. Collected data is used to evaluate the reliability of the scale before conducting official large-scale research.

Formal quantitative research was conducted with 350 outpatients coming to the Department of On-Demand Examination and Treatment, Bach Mai Hospital, through the survey method. We chose a non-probability sampling method called convenience sampling. However, to ensure the representativeness of the research sample, we selected sample units in different specialized clinics at the Department of Medical Examination and Treatment according to the requirements of Bach Mai Hospital, including ten (10) clinics. Specialties: Cardiology, Neurology, Gastroenterology, Musculoskeletal-JJoint, Dermatology, Endocrinology-DDiabetes, Respiratory, Tooth-JJaw - Facial, Ear-NNose-TThroat, Pediatrics. The research sample is satisfactory, ensuring structure and scale, according to Hair et al. (2014). According to Hair et al. (2014), for EFA exploratory factor analysis, the sample size must be at least five times the total number of observed variables in the scales. The questionnaire for this study includes 26 observed variables used in factor analysis. Therefore, the minimum sample size needed is 26 * 5 = 130 observations. In this study, there are 5 independent variables, so the minimum sample size is 26 + 8 * 5 = 66 observations. In this study, after cleaning, 327 surveys were eligible and included in the analysis.

3.2. Research model

Figure 1. Research model



Independent variables: (i) Reliability (TC) (includes four observed variables), (ii) Responsiness and suitability (DP) (includes four observed variables) (iii) Care and attention (QC) (includes five observed variables), (iv) Efficiency (HQ) (includes four observed variables), (v) Tangibility (PT) (includes five observed variables).

Dependent variable: Outpatients' satisfaction with the quality of medical examination and treatment services at Bach Mai Hospital includes four observed variables (Pham, 2024).

3.3. Data analysis

After being cleaned, the data is processed with the help of SPSS 21 software, including statistics, reliability testing through Cronbach's alpha coefficient analysis, EFA analysis, model regression, and comparison. Compare the difference in satisfaction between groups of patients with and without health insurance.

4. Research results

4.1. Cronbach' Alpha Analysis

Table 1 shows that all total correlation coefficients of each observed variable in each main scale are >0.3; the component Cronbach's alpha coefficients of the observed variables are all >0.7; and the total Cronbach's alpha of all main scales is >0.8, so the scales included in the study ensure reliability and can be included in factor analysis in EFA analysis (Hoang & Chu, 2008; Hair et al., 2009; Hair et al., 2014).

Table 1: Results of Cronbach's alpha analysis

Description	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Reliability (TC)			
TC1	.795	.859	.897
TC2	.757	.873	
TC3	.846	.840	
TC4	.697	.894	
Responsiness and suitability (DP)			
DP1	.663	.873	.878
DP2	.699	.859	
DP3	.785	.827	
DP4	.812	.814	
Care and attention (QC)			
QC1	.587	.803	.827
QC2	.540	.817	
QC3	.686	.774	
QC4	.663	.781	
QC5	.645	.787	
Efficiency (HQ)			
HQ1	.761	.863	.893
HQ2	.750	.867	
HQ3	.734	.873	
HQ4	.812	.843	
Tangibility (PT)			
PT1	.698	.884	.896
PT2	.731	.877	
PT3	.777	.866	
PT4	.795	.862	
PT5	.721	.879	
Outpatients'satisfaction (HL)			
HL1	.515	.812	.809
HL2	.600	.772	
HL3	.766	.695	
HL4	.640	.754	

Source: Prepared by the authors (2023) and SPSS software.

4.2. EFA analysis

The results of exploratory factor analysis with the scales of the independent variables are presented in detail in Tables 2 and 3. The specific measured values are as follows:

KMO coefficient = 0.776 (range from 0.5 to 1); the Barlett test has a significance level of < 0.001; Eigenvalue = 1.202 > 1; Total variance extracted: 71.702% > 50%; The loading factor of the lowest factors is 0.752 > 0.5;

Thus, the factor analysis method of the study is appropriate; with 22 observed variables included in the EFA analysis, 5 variables representing 5 main factors are extracted: Reliability (TC); responsiveness and suitability (DP); care and attention (QC); efficiency (HQ); tangibiliti (PT). These 5 forming factors represent 71.702% of the variance of the 22 observed variables. Besides, the loading coefficients of all factors are > 0.5, so new factors are created to ensure convergence and discrimination (Hoang & Chu, 2008; Hair et al., 2009; Hair et al., 2014).

Table 2. KMO and Bartlett's Test

No	Description		Value
1	**KMO**		0.776
2	**Bartlett's Test of Sphericity**	Approx. Chi-Square	4,368.870
		Df	231
		Sig.	<0.001
3	**Total Variance Explained**	Number of formation factors	5
		Eigenvalue	1.202
		Total % variance extracted	71.702

Source: Prepared by the authors (2023) and SPSS software.

Table 3: Rotation matrix results

	Component				
	1	2	3	4	5
PT4	.859				
PT3	.858				
PT2	.824				
PT5	.818				
PT1	.808				
TC3		.891			
TC1		.864			
TC2		.851			

	Component				
	1	2	3	4	5
TC4		.832			
HQ4			.912		
HQ2			.868		
HQ1			.843		
HQ3			.829		
QC3				.816	
QC5				.789	
QC4				.787	
QC1				.752	
QC2				.677	
DP4					.901
DP3					.888
DP2					.829
DP1					.802

Source: Prepared by the authors (2023) and SPSS software.

4.4. Model regression analysis

The results of the regression analysis presented in Table 4 show:

The R^2 coefficient value is 0.480. Thus, it can be concluded that the independent variables in the research model explain 48% of the variation in patient satisfaction.

F test results: F value = 60.865, sig value = 0.000. Thus, this relationship ensures reliability with an allowable level of 5%. Prove that the research model is consistent with reality. Therefore, it can be concluded that the independent variables have an impact on patient satisfaction, and the multiple linear regression model is suitable for the data set and can be used. Besides, the results of checking the multicollinearity phenomenon of the model show that the VIF coefficient of the independent variables is < 10. Thus, it can be concluded that there is no multicollinearity phenomenon in the model (Hoang & Chu, 2008; Hair et al., 2009; Hair et al., 2014).

The influence of medical service quality factors on patient satisfaction is determined through the standardized regression equation (Beta) as follows:

HL = 0.246 TC + 0.186 DP + 0.130QC + 0.279HQ + 0.197 PT

So, when current reliability increases (or decreases) by 1 standard deviation unit, patient satisfaction will increase (or decrease) by 0.246 standard deviation units.

When responsiveness and suitability increase (or decrease) by 1 standard deviation unit, patient satisfaction will increase (or decrease) by 0.186 standard deviation units.

When care and attention increase (or decrease) by 1 standard deviation unit, patient satisfaction will increase (or decrease) by 0.130 standard deviation units.

When effectiveness increases (or decreases) by 1 standard deviation unit, patient satisfaction will increase (or decrease) by 0.279 standard deviation units.

When tangibility increases (or decreases) by 1 standard deviation unit, patient satisfaction will increase (or decrease) by 0.197 standard deviation units.

Table 4: Results of regression analysis

	Beta
Reliability (TC)	**0.246**
Responsiness and suitability (DP)	0.186
Care and attention (QC)	0.130
Efficiency (HQ)	0.279
Tangibility (PT)	0.197
R^2	0.487
R^2 adjust	0.48
F	60.865
*N= 327, *p ≤ 0.05; **p ≤ 0.01; ***p ≤ 0.001*	

Source: Prepared by the authors (2023) and SPSS software.

5. Discussion and implications

Research results show that changing the value of any of the five factors will change patient satisfaction. Thus, the hospital's Board of Directors can research and select factors suitable to their abilities and practical situation to positively change patient satisfaction.

Efficiency (HQ)

Efficiency positively affects patient satisfaction with a coefficient of 0.279; this is the factor that has the strongest influence on patient satisfaction with the quality of medical examination and treatment services at Bach Mai Hospital. Efficiency is the result that patients expect to receive when participating in medical services. To get this result, the patient must be diagnosed and given appropriate testing indications. Scales commonly used to measure this factor include: diagnostic results, medical examination results, level of recovery after treatment, etc.

Hospital leadership should create conditions for doctors, nurses, and technicians to regularly study and improve their skills to ensure their professional qualifications are always updated and meet the needs of examination and treatment of new diseases, as well as increased effectiveness for old diseases. This directly affects the quality of examination and treatment for patients.

Reliability (TC)

Reliability positively affects patient satisfaction, with a coefficient of 0.246. Reliability is the trust of patients or family members in the medical

examination and treatment services provided by the hospital.

Hospitals should ensure that all information about medical services is updated promptly, publicly, and accurately for patients through the hospital's website, fan page, and on the price list listed at the hospital. This creates trust as well as convenience for patients to check and compare prices when going to see a doctor.

Hospitals should thoroughly grasp "Say no to gifts and gifts" for all medical officers and staff. It is necessary to strictly handle cases that cause difficulties for patients and intentionally suggest receiving gifts. At the same time, raise the spirit of detecting medical officers and staff who have acted wrongly towards patients through distributing leaflets and advertising in the media and around the medical examination area at the hospital.

Tangibqility (PT)

Tangibility positively affects patient satisfaction, with a coefficient of 0.197. Tangible means are infrastructure and equipment used in medical services. In addition, it also affects the attire and appearance of medical staff.

Hospitals should upgrade and replace old equipment and machinery that no longer guarantee the accuracy of results.

Hospitals should arrange more televisions to broadcast entertainment programs in waiting areas to help patients and their families reduce stress caused by waiting. In addition, hospitals should also install high-speed, stable WiFi internet systems to serve patients. The wifi internet system is currently available, but only in some areas, and the connection quality is not stable.

Responsiness and suitability (DP)

Responsiveness and suitability positively affect patient satisfaction with a coefficient of 0.186. Responsiveness and suitability are the availability of medical services that can meet all patient needs quickly and promptly; suitability is the suitability of medical services to the needs of patients; this is expressed through technical facilities and the professionalism of medical staff to meet the needs of patients. The scales used to measure this factor include the behavioral attitudes of medical staff, hygiene, and infection control in physical and technical facilities.

The hospital should standardize its online consultation team, directly answer all patients' questions, and quickly and promptly notify patients of the information they need.

Faced with the current overload situation, hospitals should take measures to distribute patients, supplement human resources at hot spots, and set up a system for scheduling medical examinations or follow-up examinations in advance so that medical staff can proactively arrange appointments. Arrange clinic schedules for doctors.

Care and attention (QC)

Care and attention positively affect patient satisfaction, with a coefficient of 0.230. Attention and care are the degrees to which the patient receives attention, care, and understanding from the medical staff. Scales to measure this factor include: medical staff's behavior; the distinction between patients with and without health insurance; and how to receive and resolve complaints.

The hospital should regularly organize training classes on behavioral skills and medical ethics for hospital officials and employees. Through these training classes, medical staff will improve their awareness and behavior when communicating with patients and family members. Hospital leadership should have sanctions to deal with individuals and groups who harass, cause trouble, and have inappropriate attitudes toward patients and family members. At the same time, commend individuals and groups with achievements in medical examination and treatment or receive letters of praise from patients and family members to create motivation and a competitive environment in the hospital.

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