An Assessment of Healthcare Services in Jordanian Public Hospitals from the Perspective of COVID-19 Patients in the Aftermath of COVID-19

Jamal M. M. Joudeh[1*], Nabil A. Abu-Loghod[2], Jameel A. Khader[3], Ibrahim L. Mukattash[4], Ahmad M. Zamil[5], Mahmoud Abu-Samak[6]

[1]Professor, Marketing Department, Faculty of Business, Applied Science Private University; MEU Research Unit, Middle East University, Amman, Jordan; E-mail: jamaljoudeh@asu.edu.jo

[2]Assistant Professor, Business Administration Programme, Faculty of Business, Arab Open University, Amman, Jordan

[3]Professor, Department of Applied Marketing, College of Applied Business Administration, King Saud University

[4]Assistant Professor, Marketing Department, Faculty of Business, Applied Science Private University, MEU Research Unit, Middle East University, Amman, Amman, Jordan

[5]Professor, Marketing Department, College of Business Administration, Prince Sattam Bin Abdulaziz University, Al-Kharj, 11942, Saudi Arabia

[6]Professor, Department of Clinical Pharmacy and Therapeutics, Faculty of Pharmacy, Applied Science Private University, MEU Research Unit, Middle East University, Amman, Jordan

Abstracts: Hospitals faced many challenges during the COVID-19 pandemic when it came to providing healthcare to patients. These obstacles included limited bed availability, shortages of medical equipment and staff, insufficient drug supply, inadequate physical facilities, and a lack of healthy environments. As the pandemic continues into its third year, it has become clear that viruses could remain a permanent part of our lives, leading to a rise in the demand for healthcare services. With this in mind, a study was conducted to investigate the impact of different healthcare service dimensions provided by public hospitals in Jordan on patient satisfaction. The research revealed that reliability, assurance, and responsiveness are the most critical dimensions for patient satisfaction, followed by tangibility and empathy. In addition, the study discovered healthcare service characteristics positively affected patient satisfaction according to the patient's age, gender, and place of treatment. In addition, the study discovered healthcare service dimensions positively affected patient satisfaction according to the patient's age, gender, and place of treatment. In order to improve and manage the healthcare services offered to patients, the study advises public hospital administrators to identify the significance of healthcare service dimensions. Administrators should pay close attention to the dimensions of tangibility and empathy, which are strong yet good, and take into account patient demographic disparities.

Keywords: Healthcare Service, Patient Satisfaction, Hospitals, COVID-19, SERVQUAL.

1. INTRODUCTION

The COVID-19 outbreak first appeared in Wuhan, China in late 2019 and rapidly spread across the globe [1,2,3]. It's considered an unprecedented disaster by experts [4]. Governments were caught off guard by the virus's rapid spread and no one knew how long the pandemic would last [5]. COVID-19 is highly contagious and is the third pandemic of the 21st century after SARS-CoV and MERS-CoV [6-8]. The world is still trying to comprehend the virus's characteristics, treatments, and long-term effects. Unfortunately, the pandemic has resulted in numerous severe illnesses and fatalities worldwide [9]. According to the World Health Organisation, as of May 3rd, 2023, there have been 765,222,932 confirmed cases of COVID-19 and 6,921,614 deaths. Furthermore, as of April 29, 2023, 13,346,989,954 vaccine doses have been administered [10].

The global outbreak of COVID-19 has created a crisis that has impacted numerous countries worldwide. This pandemic has affected different facets of life, including social, economic, physical, and mental health [11,12]. Reports from around the world have shown an increase in the number of cases and fatalities daily [13]. On March 1,

2020, the World Health Organization declared COVID-19 a worldwide health crisis and a significant threat to human life [14]. Many countries have taken steps to limit the spread of the virus, such as closing educational institutions, businesses, government offices, and border crossings [15]. To prevent the spread of COVID-19, various preventative measures and restrictions have been implemented, including social distancing, wearing face masks, using hand sanitizer, and cleaning. Measures like quarantine, isolation, lockdowns, and vaccination have been put in place to slow the pandemic and prevent the virus from spreading.

Jordan is recognized as a leader in healthcare services in the region, with one of the most advanced healthcare systems in the developing world. According to the World Bank, Jordan ranks first among Arab nations and sixth globally in health tourism [16,17]. The healthcare industry in Jordan has grown rapidly, making it an attractive marketplace for healthcare businesses. Healthcare officials in Jordan have been working to improve healthcare quality, resulting in the country establishing itself as a regional leader in healthcare services. Jordanians' interest in health concerns and healthy lifestyles has been developing for a long time [18]. There are now 121 hospitals in Jordan that serve both Jordanians and visitors, including 71 private hospitals, 33 government hospitals, 15 military hospitals, and two university hospitals. Additionally, Jordan spends 8% to 9% of its GDP on healthcare, totaling more than $3.7 billion every year [19].

The COVID-19 virus hit Jordan early, with the first case reported on March 2, 2020. In response, the Jordanian government implemented various measures to contain the spread of the virus. These measures included closing schools and colleges, limiting public gatherings, and shutting down international crossings on March 14 [20]. Furthermore, on March 17, 2020, Jordan's Defense Law was enacted to prevent a COVID-19 outbreak. The authorities also enforced safety precautions such as wearing face masks, practicing hand hygiene, sanitizing, maintaining social distance, and avoiding social gatherings [21,22].

To control the spread of the virus, the Jordanian government implemented a two-week lockdown starting on March 17. This lockdown was then extended to six weeks, during which only healthcare and essential sector providers were allowed to use vehicles. The public hospitals in Jordan faced immense pressure to handle the emergencies caused by the increase in COVID-19 patients while also continuing to provide critical services [23]. To address this issue, the Jordanian government set up six state hospitals, seventeen private hospitals, and six field hospitals across the country to provide treatment to those affected. These measures were strictly enforced until the end of April 2021, at which point the Jordanian government began gradually lifting them.

Starting from May 1, 2021, Jordanian authorities have been gradually lifting the lockdown restrictions and allowing businesses to reopen. Most sectors have already resumed operations since May 2, and all government offices, businesses, and tourist facilities are now fully operational. The curfews that were previously in place have been lifted on September 1, 2021. On April 1, 2022, the Jordanian government declared an end to all COVID-19 restrictions, and on May 7, 2023, the Defense Law was repealed. According to the World Health Organization, there were 1,746,997 confirmed cases of COVID-19 in Jordan between January 3, 2020, and May 3, 2023, with 14,122 deaths reported. As of August 20, 2022, a total of 10,057,975 vaccine doses have been delivered [10].

This study focuses on the impact of COVID-19 on infected individuals and the healthcare services provided by hospitals. Patients seek high-quality healthcare services from hospitals, while hospitals aim to provide satisfactory healthcare services to patients. The research questions that this study intends to answer are as follows:

- Are public hospital healthcare services meeting the demands of patients after the COVID-19 health crisis?
- How do various dimensions of healthcare services, such as reliability, responsiveness, assurance, empathy, and tangibility, affect patient satisfaction?
- How do healthcare services affect patient satisfaction after the COVID-19 health crisis, based on factors of gender, age, and place of treatment?

While the impact of healthcare services provided to patients in times of crisis has already been studied, this study will concentrate exclusively on healthcare services given to patients after the COVID-19 crisis. Therefore, this study aims to achieve the following objectives:

- To assess the healthcare service quality offered by Jordan's public hospitals to patients after the COVID-19 health crisis.
- To investigate the impact of health care quality aspects supplied by Jordanian hospitals and clinics on the satisfaction of infected students.
- To evaluate the impact of healthcare service on patient satisfaction via gender, age, and place of treatment.

2. METHODOLOGY OF THE STUDY

The main aim of this study is to analyze the perception of patients toward the quality of healthcare services provided by public hospitals in Jordan from the perspective of COVID-19-infected people. The five factors of the SERVQUAL model [24,25] (reliability, responsiveness, assurance, empathy, and tangibility) have been used to measure healthcare services.

2.1. Data Collection

This study's method was quantitative. The data was collected using a survey questionnaire with a 95% confidence level and a five-point Likert scale with a range of strongly disagreeing (=1) to strongly agreeing (=5). This study employed a selective approach. The statistical analysis was performed using SPSS and AMOS.

2.2. Sample

The current study used data from an underutilized sample of 496 COVID-19 patients who were infected and treated in Jordanian public hospitals during the COVID-19 outbreak. Respondents received the questionnaire both in person and on social media. There were two parts to the questionnaire. Part 1 includes questions regarding the demographic characteristics of the patients. Part 2 has 26 questions designed to assess the quality of healthcare given by public hospitals, as well as four questions designed to assess the satisfaction of patients. All study participants were promised that their information would be kept private and that their participation in the research was entirely voluntary. The primary data for this study were gathered between January 2023 and the end of March 2023.

3. RESULTS OF THE STUDY

The section presents the analysis of primary data collected from the study's sample. It covers demographic analysis, reliability and validity testing, hypothesis testing, and analysis of questionnaire paragraphs. The results are outlined below.

3.1. Patients' Characteristics

The data in Table 1 shows the demographics of the patient population. It reveals that 40% of patients were above 51 years old, 26% were between 41 and 50 years old, 19% were between 30 and 40 years old, and 15% were under 30 years old. Among the respondents, 27% were females while 73% were males. The majority of patients, that is 75%, received care from clinics, while public hospitals served only 25% of patients.

Table 1. Demographic characteristics of the patients.

Characteristics		No.	Percentage
Age	< 30	76	15
	30-40	92	19
	41-50	131	26
	51>	197	40
	Total	496	100%
Gender	Male	341	73
	Female	155	27
	Total	496	100%
Place of treatment	within the hospital	124	25
	out-clinics	372	75
	Total	496	100%

3.2. Measurement Model

Based on the data presented in Table 2, it is clear that the patients held positive attitudes toward the variables that were measured. All measures scored above an average of 3.00, which is a promising sign. The mean results ranged from 3.677 to 4.356. To ensure that the questionnaire was normal, we assessed skewness and kurtosis, ensuring that the skewness did not exceed 3.0 and kurtosis did not exceed 8.0 [26]. As indicated in Table 2, the skewness and kurtosis values were satisfactory, signifying the normality of the variables. We assessed the questionnaire's reliability using Cronbach's alpha and discovered that it had a satisfactory reliability coefficient ranging from 0.857 to 0.953, which is considered acceptable if it is at least 60% [27].

Table 2. Mean, standard deviation, Cronbach's alpha, skewness, and kurtosis

Statements	M	S. D	Alpha	Skewness	Kurtosis
Reliability					
All medical specializations are offered.	3.928	.853	0.917	-.779	-.337
The staff gives timely service	4.175	.861			
delivering services on schedule	4.248	.747			
The staff is always willing to work with patients	4.216	.788			
Responsiveness					
Staff is continually monitoring ill patients	3.725	.916	0.953	-.685	-.095
The Staff is conscious of the needs of the patients	4.063	1.112			
Rapid resolution of patient issues	3.893	1.07			
Staff are distinguished for their kindness and humanity	4.305	.798			
Staff is eager to assist patients	4.019	.879			
Assurance					
Patients receive treatment with decency and respect	3.876	.998	0.912	-.747	.357
Staff responds quickly to requests for services	4.254	.931			
Patients feel secure and safe	4.232	.798			
The staff's behavior inspires trust among patients	3.992	.972			
Empathy					
The staff prioritizes the patients' interests	4.041	1.203	0.899	-1.137	1.686
Each patient receives individual attention from the staff	4.287	.976			
All patient requirements are met immediately by staff	3.889	1.17			
Staff promptly respond to inquiries and complaints	3.677	.876			
Tangibility					
All medical equipment needed is available	3.957	1.135	0.927	-1.365	1.588
The location is convenient and easy to reach	3.827	1.158			
The facilities are appropriate and acceptable	3.868	.846			
The healthy and comfortable environment available	3.887	1.211			
Satisfaction					

I am satisfied with the healthcare provided	4.214	.952	0.857	-1.114	-.084
I am satisfied with the healthcare provided by the staff	4.327	.895			
I am satisfied with the internal environment	4.356	.894			

We used the goodness-of-fit model to assess the validity of variables. Table 3 showed that the chi-square/degree of freedom (2/df) value was 3.21, which is lower than the recommended value of 5. The adjusted goodness-of-fit index (AGFI) was 0.836, which exceeded the recommended value of 0.8. Additionally, the root-mean-square approximation error (RMSEA) was 0.093, lower than the recommended limit of 0.10. Meanwhile, the normed fit index (NFI) was 0.923, the comparative fit index (CFI) was 0.918, and the goodness-of-fit index (GFI) was 0.914, all of which were above 0.90. Therefore, based on Table 3, we concluded that the aforementioned indicators were satisfactory for the study's purpose [28-31].

Table 3. The goodness of fit model

	AGFI	χ2/ df	GFI	RMSEA	CFI	NFI
Recommended	> .80	< 5	> .90	≤ .10	> .90	> .90
Study model	.836	4.11	.914	.093	.918	.923

3.3. Testing of Hypotheses

To test the hypotheses of this study, SPSS and AMOS analyses were utilized. The study determined reliability, responsiveness, assurance, empathy, and tangibility as independent variables for healthcare service dimensions. Patient satisfaction was considered the dependent variable. Mediators such as age, gender, and place of treatment were also considered. The study aimed to test multiple hypotheses.

H1: Healthcare service dimensions have a positive impact on the satisfaction of patients.

The data presented in Table 4 illustrates the effect of various healthcare service dimensions on patient satisfaction. The results indicate that reliability has the greatest impact on patient satisfaction (β=.448; t-value=9.855; p=.000). Assurance closely follows with a significant positive effect (β=.412; t-value=10.793; p=.000). Responsiveness is ranked third and also has a significant positive impact on patient satisfaction (β=.335; t-value=8.131; p=.000). Tangibility has a positive influence on patient satisfaction as well, ranking fourth with a β-value of .132 and a t-value of 4.184 (p=.000). Empathy had the smallest but still significant impact (β=.076; t-value=3.462; p=.023). Therefore, the data presented in Table 4 supports the study's first hypothesis (H1).

Table 4. The impact of the healthcare service dimensions on the satisfaction of patients

hypotheses	Variables	B	Std. Error	β	T	Sig.	Tolerance	VIF
H1.1	Reliability	.481	.064	.448	9.855	.000	.593	1.924
H1.2	Responsiveness	.363	.062	.335	8.131	.000	.376	2.721
H1.3	Assurance	.462	.051	.412	10.793	.000	.383	3.336
H1.4	Empathy	.084	.038	.076	3.462	.023	.615	1.513
H1.5	Tangibility	.148	.027	.132	4.184	.000	.844	2.253

H2: Healthcare service has a positive impact on the satisfaction of patients.

The impact of healthcare services on patient satisfaction was explored through an ANOVA analysis on H2. The results, as shown in Table 5, revealed that patients were highly satisfied with the healthcare services they received. The F value obtained was 259.556 with a sig. = .000, which is below the P ≤ .05 confidence level established for the study. Moreover, the results indicated a strong connection between healthcare service and patient satisfaction, with R = .659 and R^2 = .613. However, this study did not include 38.7% of factors that contribute to patient satisfaction. These findings support hypothesis (2) as presented in Table 5.

Table 5. The impact of healthcare service on the satisfaction of patients.

Hypothesis	Variable	R	R^2	Std. Error	F	Sig.	Result
H2	healthcare service	.659	.613	.467	259.556	.000	Supported

H (3): Healthcare service has a positive impact on the satisfaction of patients via age, gender, and place of treatment.

We conducted a study using structural equation analysis to explore the relationship between healthcare services and patient satisfaction, taking into consideration age, gender, and place of treatment. The results, as shown in Table 6, indicate that age, gender, and place of treatment all play a significant role in mediating this relationship. Specifically, age has a positive indirect effect on patient satisfaction, with a value of β = .639 and a p-value of .000. Gender also has a significant mediating effect, with an indirect effect of β= .343 and a p-value of .000. Furthermore, place of treatment is also a significant mediator, with an indirect effect β = .537 and a p-value = .000.

Table 6. The impact of healthcare service on the satisfaction of patients via age, gender, and place of treatment

H3			Indirect impact	T-value	P	Result
healthcare service	Age	satisfaction	.639	9.798	.000	Supported
healthcare service	Gender	satisfaction	.343	5.142	.000	Supported
healthcare service	place of treatment	satisfaction	.537	8.351	.000	Supported

4. DISCUSSION

The purpose of this research is to examine the influence of healthcare services on patient contentment in public hospitals in Jordan. Three hypotheses were put forward and studied. The findings revealed that patients are content with the services and believe that their requirements have been fulfilled, indicating a favorable perception of the quality of healthcare services rendered by Jordanian public hospitals. A comprehensive analysis of the hypotheses is given below:

A recent study revealed that healthcare service quality has a direct impact on patient satisfaction. The study examined different dimensions of healthcare service, including reliability, responsiveness, assurance, empathy, and tangibility. Among these, reliability had the highest impact at 44.8%, with timely service by qualified staff being crucial for COVID-19 patients. Assurance ranked second at 41.2%, with patients feeling secure being treated by professionals. Responsiveness came third at 33.5%, indicating public hospitals' ability to address patients' concerns. Tangibility had a significant impact of 13.2%, with factors such as medical equipment, location, facilities, and a comfortable environment contributing to patient satisfaction. However, the empathy dimension had the least significant positive impact at 7.6%, implying that hospital staff didn't pay enough attention to patient needs and concerns. The study also found a strong (61.3%) and significant relationship between patient satisfaction and the quality of healthcare services provided by public hospitals.

In this research, the influence of age, gender, and location of treatment on patient satisfaction with healthcare services was investigated. The findings revealed that these factors had a positive effect on improving patient satisfaction. Patients who received healthcare services from public hospitals expressed high levels of satisfaction, regardless of their age, gender, or treatment location. The study indicated that healthcare services had an especially beneficial impact on patient satisfaction for individuals under the age of 63.9%. Gender also played a notable role, with a positive effect of 41.8%. Additionally, the location of treatment had a significant influence, with a positive impact of 53.7%.

CONCLUSION

This study has examined the relationship between healthcare service dimensions and patient satisfaction. The results indicate that public hospitals have a positive impact on patient satisfaction with their healthcare services.

The reliability, assurance, and responsiveness of healthcare services are key factors that affect patient satisfaction. However, the tangibility and empathy dimensions had the lowest positive impact on patient satisfaction. The study also discovered that patient satisfaction and healthcare service quality are influenced positively by age, gender, and place of treatment. These findings are valuable for healthcare administrators and staff to prioritize healthcare quality dimensions, pay attention to the weaker dimensions, and consider demographic differences among patients.

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