

# Evaluation of Service Quality of a Saudi Cardiac Center: Patients are the Best Judges!

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**ABSTRACT**—Healthcare sector has lately witnessed growing interest in service quality, which concerns consumers' perceptions and opinions about the services provided as well as in patient's satisfaction which is a significant outcome indicator of health-care delivery.

The objectives of this study were to assess service quality from patients' perspective using SERVQUAL framework in addition to patients' overall satisfaction with the provided services.

In May 2018, a cross-sectional study in a tertiary referral Cardiac Center –Kingdom of Saudi Arabia was conducted using a systematic random selection method, a total of two hundred (200) adult patients (outpatients=136; inpatients= 64) were recruited. The 40-item questionnaire included patients' socio-demographic characteristics, seven (7) Service Quality Dimensions (SQDs) and one patients' satisfaction item. Data were analyzed using descriptive statistics, Mann-Whitney tests, Spearman's rank correlations and Chi-square tests.

The results showed high perceptions of all SQDs, where all median (4.00 to 4.25) and mean scores (4.17 to 4.40) were relatively high. The median and mean scores of patients' satisfaction were also relatively high, 4.00 and 4.41 respectively. Moreover, Patient's Satisfaction Rate was 93.5%. No significant differences between outpatients and inpatients in all SQDs or satisfaction levels were found. Additionally, there were significant positive correlations ( $P \leq 0.01$ ) between patients' satisfaction and all SQDs. With the exception of place of residence ( $P$ -value=0.045), There were no significant differences in the level of satisfaction by patients' socio-demographic characteristics.

Our study has shown pleasing levels of patients' perception of SQDs and satisfaction. Yet, continuous efforts to maintain these levels are required. Additionally, a special attention should be given to patients coming from outside Qassim region.

Methodological limitations to our findings include the possibility of "ceiling effect" related to the high satisfaction levels; the non-Gaussian distribution of the data, which limited the use of parametric tests.

**Index Terms**— Service Quality, Patient's Satisfaction, KSA.

## I. INTRODUCTION

### A. Background

Like many other sectors, healthcare sector has witnessed growing interest in customer satisfaction over the past few decades. According to the Executive Director of the Institute for Healthcare Excellence: "*thinking of patients as customers enables a shift to true patient-centered care.....*" [1]. With this insight, patients are believed to be the best judges of the

quality of their care [2].

Interest in patients' satisfaction has been obviously increasing in the Kingdom of Saudi Arabia (KSA), which is experiencing remarkable changes in healthcare reforms after the declaration of *Vision 2030* and the *Saudi National Transformation Program 2020 in 2016*. Healthcare has been among the main components of the vision and transformation, with a major reform being the privatization of healthcare system. This transition to a privatized healthcare system is expected to promote competitiveness among Saudi health care facilities [3-4]. Previous studies have shown that competition in the healthcare marketplace has a positive influence in terms of service quality, cost-containment, and patient satisfaction [5]. Positive patient experiences and satisfaction with health care results in a good reputation of particular healthcare provider, and will ultimately drive patients towards recommending that provider. Accordingly, it is expected that Saudi healthcare facilities will strive even more to provide the best quality of services to their patients. From a quality improvement perspective, it is necessary to collect data from patients to assess the current status of quality service and satisfaction in order to be able to capture opportunities for improvement.

### B. Theoretical framework

There are numerous definitions of "*service quality*" found in the literature. What matters is that all definitions have comparable concept; which entails that service quality concerns consumers' perceptions and opinions about the services provided. Consumers' opinions, in turn, are driven from the resultant gap between customer's expectation and perception [6]. Likewise, there is discrepancy in defining the concept of "*patient's satisfaction*", nevertheless; there is congruence that patient's satisfaction is a significant outcome indicator of health-care delivery systems [7].

According to Gochman [8], patient's perceptions of satisfaction is determined by a wide range of factors including patients' characteristics, trust and needs, perceived providers interpersonal and technical skills coupled with a perception of (in)appropriate response to treatment.

A good number of theoretical frameworks have been proposed to evaluate service quality from patients' perspectives, among which SERVQUAL framework is amongst the most pervasive ones. Since its inception by Parasuraman et al. in 1988 [9], SERVQUAL framework has been utilized to assess service quality in various service industries and across different languages, socio-demographic backgrounds and ethnicities including Arabs [10].

Given the fact those patients' perceptions of the service quality are powerful determinants of patient satisfaction [11]; patients' expectations were not included in the study.

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SERVQUAL framework encompasses five (5) dimensions namely *tangible*, *reliability responsiveness*, *assurance*, and *empathy*. Given the distinctiveness of Saudi culture, it is believed that the presence of a high proportion of foreign healthcare professionals in KSA may contribute to less patient satisfaction due to differences in mother languages and cultures [12]. Consequently, and based on the review of literature related to our study [11], two more relevant dimensions were added, namely *culture* and *communication*.

Accordingly, the following seven service quality dimensions (SQDs) were assessed in this study:

1. **Tangible**- the appearance of physical facilities, personnel and equipment.
2. **Reliability**- ability to perform services dependably and accurately.
3. **Responsiveness**- willingness to assist customers and provide prompt service.
4. **Assurance**- staff courtesy and knowledge when dealing with customers.
5. **Empathy**- providing gentle and individualized attention to customers.
6. **Culture**- considers barriers in the delivery of healthcare according to language and religion.
7. **Communication**- describes the interaction between healthcare providers and patients.

The conceptual model of the study is shown in Fig. 1.

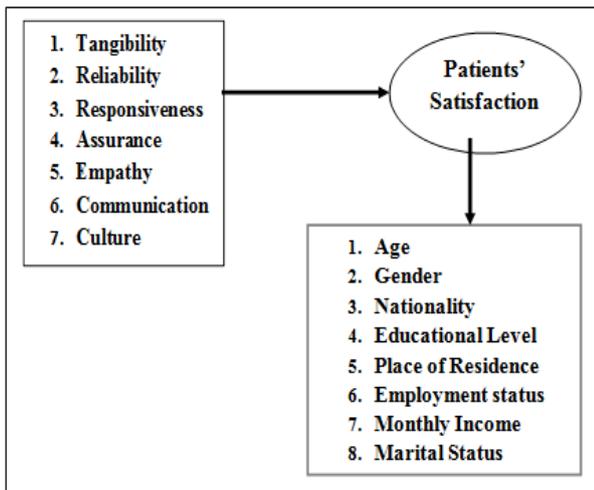


Fig.1 The conceptual model of the study.

### C. Aim and Objectives

The purpose of this study was to assess service quality of Prince Sultan Cardiac Center-Qassim (PSCCQ) from the patients' perspective using SERVQUAL framework and to assess patients' overall satisfaction with the provided services. Ultimately, the study aimed to offer decision makers in PSCCQ with data-driven, fact-based recommendations for improvement –if needed.

Accordingly, the study sought to address the following specific objectives:

1. To describe how patients perceive the previously mentioned seven SQDs.
2. To determine the proportion of patients who

are satisfied/dissatisfied with the quality of services provided by PSCCQ.

3. To test if there are statistically significant differences in SQDs and in satisfaction between outpatients and inpatients.
4. To identify the relationship between the seven SQDs and patient's satisfaction.
5. To test if there are statistically significant differences in satisfaction by patients socio-demographic characteristics.

## II. METHODOLOGY

### A. Procedure

This study was conducted at PSCCQ, which is located in Qassim Region, KSA. With its 50-bed capacity, PSCCQ is the only specialized facility to serve all age groups in Qassim region as well as the nearby areas. PSCCQ is operated under the system of "Self-Operation Program for Health Services" (SOPHS), which is under the direct supervision of the Ministry of Health, represented by the General Directorate of Health Affairs, Al Qassim Region.

In May 2018, a cross-sectional survey was conducted over a period of two weeks comprising a representative sample of two-hundred (200) patients (outpatients=136; inpatients=64) using a systematic random selection of patients at each area of service delivery (outpatients vs. inpatient). Furthermore, pediatric patients (aged less than 18 years) were excluded from the study to limit the study to either patients themselves or their accompanying caregivers.

Outpatients-from both morning and afternoon clinics-were invited to complete the surveys typically after the visit. Comparably, inpatients were invited to complete the surveys typically upon discharge from the Center. Delaying surveys administration until completion of the treatment process gives patients the needed time to get a full picture about the contents of the survey for the evaluation process. Furthermore, standardization of the instance of satisfaction surveys administration is essential as inconsistency in timing might results in varied outcomes and makes results incomparable [13].For illiterate patients, trained data collectors administered the questionnaire and read the items word-for-word exactly as printed.

### B. Questionnaire

The questionnaire, which consisted of forty (40) items, was divided into two sections: (a) socio-demographic characteristics of the patients and (b) assessment of service quality and overall satisfaction. Owing to the multinational and multilingual nature of KSA, two language versions of the questionnaire (Arabic and English) were produced. The original questionnaire was initially designed in English and then translated into Arabic using parallel translation method. Both versions were piloted with equal numbers of patients (n=7) of the corresponding language before being administered to the target population. Small modifications in the phrasing of some questions of the Arabic version were applied.

### C. Measures

#### – Socio-Demographic Characteristics

**Age.** Patients' age was categorized into 5 intervals (34 years or less; 35-44 years; 45-54 years; 55-64 years; 65 or older).

**Gender.** Patients were asked to indicate their gender (male/female).

**Nationality.** Patient's nationality was dichotomized into Saudi and Non-Saudi.

**Educational Level.** Patients educational level was categorized into four groups (no formal education; elementary school or below; high school or below; university or above).

**Place of Residence.** Patient's place of residence was dichotomized as residing in Qassim Region (IQR) or residing outside Qassim Region (OQR).

**Employment Status.** Patients' employment status was categorized into four groups (employed; unemployed; retired; housewife).

**Monthly Income.** Patients' monthly income was categorized into three interval ( $\leq 5,000$  SAR;  $>5,000-10,000$  SAR;  $>10,000$  SAR).

**Marital Status.** Patients' marital status was stratified into four groups (single; married; separated/divorced; widowed).

#### – Patients' Perceived Service Quality

A 5-point Likert scale ranging from "strongly disagree" to "strongly agree" was used to assess patients' perception of service quality relating to tangible (e.g. staff are well dressed and appear neat) reliability (e.g. Center's staff are professional and competent), responsiveness (e.g. staff are always willing to help patients), assurance (e.g. the behavior of staff instill confidence in patients), empathy (e.g. staff have their patients best interest at heart), communication (e.g. the doctors were willing to answer any questions relating to illness) and culture (e.g. staff take into consideration the traditions, values and social norms of the community).

#### – Patients' Overall Satisfaction with the services provided

A 5-point Likert scale ranging from "not at all satisfied" to "extremely satisfied" was used to assess patients' satisfaction with the services provided (overall, how Satisfied are you with the services provided by PSCCQ?).

### D. Statistical Analyses

The statistical analyses were performed using SPSS, version 20 statistical software (SPSS Inc., Chicago, Illinois). Patients' socio-demographic characteristics were summarized as frequencies and percentages, and comparisons between groups were performed with Pearson's chi-square test. The internal consistency (reliability) of the

scales of SQDs was assessed using Cronbach's alpha ( $\alpha$ ). The Kolmogorov-Smirnov (KS) and Shapiro-Wilk tests were performed first to check for normality of data. Because our data were not normally distributed, non-parametric test were employed. Median scores were calculated for the responses to SQDs and satisfaction with the services provided, where higher scores indicate a more positive perception and a greater satisfaction. Nonetheless, mean scores and standard deviations were also reported to facilitate comparisons with previous works. Mann-Whitney test was used to assess differences in SQDs and satisfaction between outpatients and inpatients. Additionally, Spearman's correlation coefficient was used to explore the correlations between QSDs and the Overall Satisfaction. Finally, Chi-square tests were performed to describe differences in patients' satisfaction with service quality by Socio-demographic characteristics. A  $P$ -value of  $<0.05$  was considered statistically significant.

## III. RESULTS

### A. Characteristics of the Sample

As shown in table 1, around one third of respondents (31.4%) aged between 45-54 years and the male to female ratio was 1.07:1. The vast majority of the sample was Saudi (94.2%). With respect to the educational level, around one third of respondents (32.5%) had no formal education and 18.6% had university or above education. Around one fourth of the respondents (25.5%) came from OQR. Additionally, less than one fourth of the respondents (21.9%) were employed. Regarding the monthly income, 44.6% of respondents had  $\leq 5,000$  SAR whereas 18.70% had a monthly income  $>10,000$  SAR. The majority of the sample was married (77.6%). Furthermore, the significant differences between outpatients and inpatients were related to age ( $P$ -value=.013), gender ( $P$ -value=.000) and employment status. ( $P$ -value=.029).

### B. Patients' Perception of the SQDs

As shown in table 2, all SQDs were highly reliable; Cronbach's alpha ranged from 0.90 to 0.95. Given these high internal consistency values and the notion that data analysis must use the "summated scales and not individual items" [14], analysis at item-level was not performed. The results showed high perception of all SQDs, where all median and mean scores (on a 5-point scale) were relatively high. Median scores ranged from 4.00 to 4.25, and mean score ranged from 4.17 to 4.40.

### C. Patients' Overall Satisfaction with the services provided

The median and mean scores of patients' satisfaction (on a 5-point scale) were relatively high, 4.00 and 4.41 respectively. Moreover, the proportion of patients who were dissatisfied with the quality of services provided by PSCCQ= 6.5%, i.e. Patient's Satisfaction Rate was 93.5%.

### D. Differences in SQDs between Outpatients and Inpatients

According to Mann-Whitney tests, no significant differences between outpatients and inpatients in all SQDs were found.

**E. Correlations between SQDs and Patients' Satisfaction**

Table 4 presents the results of Spearman's correlation analysis between patients' satisfaction with quality of services and the seven dimensions of service quality. As seen in the matrix, there were significant positive correlations ( $P \leq 0.01$ ) between patients' satisfaction and all dimensions of service quality with empathy being the strongest correlate ( $\rho=0.731$ ) and tangibility being the lowest one ( $\rho = 0.617$ ). Moreover, there were significant positive correlations between all the seven dimensions of service quality ( $p \leq 0.01$ ). The strongest correlation was between empathy and culture ( $\rho = 0.907$ ) whereas the weakest was between tangibility and culture ( $\rho = 0.644$ ).

**F. Differences in satisfaction level by area of service and patients' socio-demographic characteristics**

According to Chi-square tests, there were no significant differences in the level of satisfaction by age, gender, nationality, educational level, employment status, monthly income or marital status. Nevertheless, there was a significant difference according to place of residence; patients coming from OQR were less satisfied with the provided service quality than those coming from (P-value= 0.45).

**Table 1.Characteristics of the sample population according to the area of service delivery**

Characteristic	Outpatients N (%)	Inpatients N (%)	P-value*	Total Sample N (%)
<b>Age</b>			<b>0.013</b>	
- 34 years or less	17(13.1%)	1(1.6%)		18(9.3%)
- 35-44 years	26(20%)	11(17.2%)		37(19.1%)
- 45-54 years	44(33.8%)	17(26.5%)		61(31.4%)
- 55-64 years	28(21.5%)	20(31.3%)		48(24.7%)
- 65 or older	15(11.5%)	15(23.4%)		30(15.5%)
<b>Gender</b>			<b>0.000</b>	
- Male	57(28.6%)	46(23.1%)		103(51.8%)
- Female	79(39.7%)	17(8.5%)		96(48.2%)
<b>Nationality</b>			0.540	
- Saudi	119(62.6%)	60(31.6%)		179 (94.2 %)
- Non-Saudi	7(3.7%)	4(2.1%)		11 (5.8%)
<b>Educational Level</b>			0.460	
- No formal Education	46(23.7%)	17(8.8%)		63 (32.5%)
- Elementary school or below	27(13.9%)	19(9.8%)		46(23.7%)
- High school or below	33(17.0%)	16(8.2%)		49(25.3%)
- University or above	25(12.9%)	11(5.7%)		36(18.6%)
<b>Place of Residence</b>			0.306	
- OQR	31(16.1%)	18(9.4%)		49(25.5%)
- IQR	98(51.0%)	45(23.4%)		143(74.5%)
<b>Employment status</b>			<b>0.029</b>	
- Employed	30(15.3%)	13(6.6%)		43(21.9%)
- Unemployed	33(16.8%)	7(3.6%)		40(20.4%)
- Retired	35(17.9%)	29(14.8%)		64(32.7)
- Housewife	34(17.3%)	15(7.7%)		49(25.0%)
<b>Monthly Income</b>			0.426	
- ≤5,000 SAR	63(32.6%)	23(11.9%)		86(44.60%)
- >5,000-10,000 SAR	46(23.8%)	25(13.0%)		71(36.80%)
- >10,000 SAR	23(11.9%)	13(6.7%)		36(18.70%)
<b>Marital Status</b>			0.58	
- Single	7(3.6%)	1(0.5%)		8(4.2%)
- Married	98(51.0%)	51(26.6%)		149(77.6%)
- Separated/Divorced	6(3.1%)	2(1.0%)		8(4.2%)
- Widowed	19(9.9%)	8(4.2%)		27(14.1%)

\*Significant results are typed in bold ( $P < 0.05$ )

Table 2. Reliability and overall Median & Mean Scores of SQDs and Satisfaction

Dimension	$\alpha$	Median Scores	Mean Scores (SD)
Tangibility	0.91	4.00	4.17 (0.70)
Reliability	0.90	4.20	4.31 (0.58)
Responsiveness	0.93	4.22	4.36 (0.61)
Assurance	0.94	4.00	4.35 (0.62)
Empathy	0.93	4.20	4.31 (0.61)
Communication	0.95	4.13	4.40 (0.55)
Culture	0.92	4.25	4.39 (0.58)
Overall Satisfaction	----	4.00	4.41 (0.64)

Table 3. Differences in SQDs and Satisfaction between Outpatients and Inpatients

Dimension	$\alpha$	<= Median (Mean Rank)		Mann-Whitney U	P-value
		Outpatients	Inpatients		
Tangibility	0.91	78(98.01)	34(105.78)	4014.00	0.36
Reliability	0.90	70(100.56)	36(100.38)	4344.50	0.98
Responsiveness	0.93	68(100.61)	32(100.27)	4337.00	0.97
Assurance	0.94	67(100.61)	34(99.91)	4314.00	0.92
Empathy	0.93	65(101.43)	35(98.53)	4226.00	0.73
Communication	0.95	66(101.02)	34(99.40)	4281.50	0.84
Culture	0.92	73(99.65)	34(99.65)	4235.50	0.75
Overall Satisfaction	----	37 (97.22)	28(107.46)	3906.50	0.19

Table 4. Correlations between QSDs and Overall Satisfaction

	Tangibility	Reliability	Responsiveness	Assurance	Empathy	Communication	Culture	Satisfaction
Tangibility	1							
Reliability	0.813**	1						
Responsiveness	0.655**	0.833**	1					
Assurance	0.654**	0.859**	0.859**	1				
Empathy	0.672**	0.857**	0.828**	0.889**	1			
Communication	0.657**	0.827**	0.798**	0.856**	0.899**	1		
Culture	0.644**	0.827**	0.841**	0.896**	0.907**	0.884**	1	
Satisfaction	0.617**	0.712**	0.702**	0.718**	0.731**	0.687**	0.691**	1

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

Table 5. Patients' Satisfaction with service quality by patient's socio-demographic characteristics

Characteristic	Pearson Chi-Square	df	P-value*
Area of Service	0.51	1	0.48
Age	5.68	4	0.22
Gender	0.02	1	0.88
Nationality	0.23	1	0.63
Educational Level	0.70	3	0.87
Place of Residency	4.04	1	<b>0.045</b>
Employment Status	0.63	3	0.89
Monthly Income	1.18	2	0.56
Marital Status	2.77	3	0.43

\*Significant results are typed in bold (P < 0.05)

#### IV. DISCUSSION

According to the obtained results, PSCCQ's patients generally perceived high levels of service quality for all the seven dimensions, with the dimension of culture being the highest and dimensions of tangibility and assurance being relatively the lowest. These results are incongruent with a recent study conducted by Fraihi, and Latif in Eastern Saudi Arabia [15], which found that patients' perception of tangibility, reliability, responsiveness, assurance, and empathy were all modest (mean scores ranging from 3.2 to 3.9 on a 5-point scale).

Still, similar to our findings, tangibility was the lowest dimension to be perceived. In another study conducted among medical-surgical patients in a public hospital in Riyadh, a wider range of scores for tangibility, reliability, responsiveness, assurance, and empathy were found (ranging from 2.81 to 4.82 on a 5-point scale) [16].

On the other hand, results showed that the vast majority of PSCCQ's patients (93.5%) were satisfied with the quality of services provided by PSCCQ. This is also inconsistent with other previous local studies which reported much lower rates of satisfaction [17-18]. Nonetheless; the satisfaction rate obtained in this study is comparable to the rates found in the regularly conducted patient's satisfaction surveys in our Center. A likely explanation for these positive perceptions of SQDs and high satisfaction levels among patients of PSCCQ might be attributed to the self-operating system under which the Center is running (SOPHS). This SOPHS has proven its ability to enhance the quality of the provided services through offering public facilities opportunities to manage their own budgets, health care quality and labor force [19]. Ultimately; it is not surprising that SOPHS can promote patients experience and satisfaction as well as staff satisfaction. As such, this finding can generate more enthusiasm and optimism for the future of "privatization of Saudi healthcare system". A conclusion that might be conflicting with what Hazazi and Chandramohan [20] argued regarding the absence of supporting signs in favor of privatization of Saudi healthcare. Another possible explanation might be related to the size of the PSCCQ in terms of bed capacity. PSCCQ is a tertiary referral Center with only fifty (50) beds. Previous research has revealed that patient satisfaction correlates inversely with the size of the healthcare facility [21-23]. Moreover, previous studies have shown that small healthcare facilities are more prepared to offer well-timed quality services [21] and have better staff engagement [24]. Although our study has shown a pleasing levels of patients' perceptions of SQDs and satisfaction, continuous efforts to maintain these levels are required.

With regards to results of correlations between SQDs and patient's satisfaction, Spearman's rank correlations showed a moderate to high positive monotonic correlation ( $\rho=0.617-0.731$ ). The dimension of empathy was the strongest correlate of satisfaction, a finding that is consistent with earlier studies [25-27]. Expectedly, the sympathy and individualized attention provided to the patients by the staff can positively affect their satisfaction with treatment services. In contrast, the dimension of tangibility was the weakest correlate of satisfaction ( $\rho=0.617$ ). True to form,

SQDs of SERVQUAL framework could determine/predict customer satisfaction in many previous regional studies [10, 15-16, 28].

Finally, with the exception of place of residence, our results revealed no significant differences in the level of satisfaction by various patients' socio-demographic characteristics (*i.e.* age, gender, nationality, educational level, employment status, monthly income or marital status). Patients coming from OQR were less satisfied with the provided service quality than those coming from IQR ( $P$ -value=0.045). Unsurprisingly, previous works have demonstrated that the effect of socio-demographic characteristics on satisfaction may vary not only from one country to other country but also within a country from one region to another region. In our study' setting, it was found that the overall satisfaction of patients residing OQR was significantly lower than those residing IQR. Therefore, this finding necessitates that a particular attention should be given to outsider's patients. It is recommended to investigate the basis of this finding by conducting a qualitative interview study among this segment of patients so that to explore the contributing factors to the dissatisfaction. Additionally and concurrently, extra psychosocial support and reassurance should be offered to them.

#### V. LIMITATIONS AND STRENGTHS

There are some methodological limitations to our findings. First, the high satisfaction levels could be producing a "ceiling effect" masking any potential differences between patients. Second, it was planned to perform a regression analysis to assess if the conceptual model of the study (displayed in fig. 1) can explain patients' satisfaction adequately in addition to determining the predictors of patients' satisfaction among the patients' socio-demographic characteristics and the seven SQDs. However, owing to non-Gaussian distribution of our data, regression analysis was not conducted. The non-parametric Spearman rank correlation was instead used to assess the presence and strength of associations between the variables. Third, like any satisfaction survey, the potential bias of "socially-desirable responding" is likely. To reduce the risk of this bias, two protecting strategies were implemented. First, patients were surveyed after treatment completion (pre-discharge). Second, patients' confidentiality and anonymity were highly ensured, with special focus on the answers of the illiterate patients. The last limitation concerns the extent to which study's findings can be generalized to other Saudi healthcare facilities. As the study has only targeted one tertiary referral Center, which is operated in SOPHS, results might not be generalized to other Saudi healthcare facilities. In spite of these potential limitations, the study had considerable strengths. To the best of our knowledge, this is the first study to be conducted in Qassim Region and nearby areas to provide in-depth insight into patients' perceptions of SQDs and their satisfaction with the quality of the received services. Moreover, it might be the first local study to explore the differences between inpatients and outpatients by classifying patients based on the area of service.

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