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Service Quality Factors of Healthcare System from COVID19 Patients Perspectives

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Abstract: This paper presents a study to investigate the service quality of healthcare system in UAE. The respondents are the users of the healthcare system. They were asked to grade the healthcare system through 25 items in five domains which are Reliability; Responsiveness; Assurance; Empathy and Tangibles. A total of 384 respondents participated in the questionnaire survey are COVID-19 patients discharged from UAE healthcare system. The analysis on the collected data found that three domains which are reliability, responsiveness and tangibles are having high level of satisfaction according to the respondent's perspective in experiencing the healthcare during COVID19 treatment. In term of ranking analysis, the responsiveness domain is ranked first with the highest score of 3.890, followed by reliability domain with mean score of 3.572, then tangibles domain with 3.533, empathy domain with 3.370 and finally assurance domain with 3.170. The findings from this study helps the healthcare practitioners in improving their service quality to the patients.

Keywords: healthcare system, service quality, COVID19 patients

1. Introduction

UAE has taken several strategic and innovative measures to control the COVID-19 transmission. Such measure also include the diagnosis and treatment of infected persons (Waqaas et al., 2020). However, the level of which such innovative prowess is entrenched in the UAE healthcare organisation is not completely known. According to Zineddine (2012), without the UAE governmental involvement, it doesn't seem like the healthcare sector is willingly to perform proper safeguards through innovative and qualitative services. Particular laws and electronic private healthcare information (ePHI) security principle does not exist nowadays in the UAE. Healthcare Authorities are trying their best to develop and improve healthcare sector standards through implementation of Electronic Health Record (EHR), data standards and electronic private healthcare information (ePHI) protection, an itemized privacy, security principle and performing mechanisms are required. Similarly, there are reported outpatients' unpleasant experience of services related to waiting time UAE healthcare organisations which requires considerable improvement in innovation and quality of services (Aburayya, Alshurideh, & Albqaeen, 2020). However, there is no reported empirical finding regarding COVID-19 discharged patients experience with the quality of healthcare they receive. Its therefore imperative to assess the level of service quality, service innovation and patient experience in the UAE healthcare organisations.

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Mostly, the previous studies that concentrate on innovation and service quality and its importance on fulfilling customers' experience were in other industries other than the healthcare. Some of these studies have focused on the innovation in the educational sector (Yazdi & Acharya, 2013), innovation in large industrial firms (Joiner & Lusch, 2016). However, a few numbers of studies have been investigating how important innovation is for healthcare organizations mostly from organizational rather than patients' perspective (Bae, Lee, & Kim, 2014; Bott et al., 2019; Brandenburg, Gabow, Steele, Toussaint, & Tyson, 2015; Pfannstiel & Rasche, 2017, 2019; Takagi et al., 2012). Most of these studies did not show how service innovation in healthcare facilities influence patients' experience. They mostly focused more on the reasons why healthcare organizations adopt innovation (Moussa, Garcia-Cardenas, & Benrimoj, 2019). Only a handful of researches empirically test the relationship between service innovation and patients' experience (Chen et al., 2014; Weng et al., 2016; Wu & Hsieh, 2015). Also, there is no known study that investigates the importance of innovation in the emerging UAE healthcare industry towards COVID-19 discharged patients' experience.

Similarly, there are so much research effort on service quality in the healthcare industry (Abdelfattah, Rahman, & Osman, 2015; Giovanis et al., 2018; Kalaja, Myshketa, & Scalera, 2016; Oyatoye, Amole, & Adebiyi, 2016). These studies use service quality as antecedent of patients' satisfaction rather than experience. Although patients' satisfaction is sometimes used as a proxy of patients' experience (Arsanam & Yousapronpaiboon, 2014; Barwitz, 2020; Brandenburg et al., 2015; Giovanis et al., 2018), satisfactions measures are mostly subjective and too wide and does not precisely measure objective performance of the healthcare service delivery (Ishiyaku, 2016). This is due to the fact that a satisfaction rating such as "very satisfied" or "very dissatisfied" is a bundle containing the participant's traits such as intuition, social behaviour, economic context, and a variety of other characteristics that may evolve over time. Therefore, this study argued that health care service delivery can be tested more efficiently using the COVID-19 discharged patients' experience with healthcare services. This is because patients' experience is nearer to truth and hence reality than satisfaction. Similarly, available studies on innovation and service quality relative during COVID-19 pandemic did not address the discharged patient's experience. Most of the studies dwell generally on healthcare during the pandemic and the resultant effect on other sectors such as education and commercial activities (Al-Maroof, Salloum, Hassanien, & Shaalan, 2020; Doyle, 2020; Kh, 2020; Papadopoulos, Baltas, & Balta, 2020; Shirazi, Kia, & Ghasemi, 2020; Waqaas et al., 2020; Zada et al., 2020). Thus, the COVID-19 discharged patients' experiences of healthcare services is an important gap in literature. This study was conducted to investigate the service quality provided by the healthcare system from the perceptive of the patients experienced.

2. Service Quality

Quality has become a topic of debate in a variety of fields. In this respect, healthcare organisations are not an exception. To fulfil the desires and aspirations of their patients, as well as to preserve and enhance their reputation, they need facilities, staffing, efficient and innovative services. The concept of quality is challenging to define because it is relative and depends on one's expectation and orientation. Service quality is seen as the relationship between the consumer's expectation of the service and the actual performance of the services. It is the overall evaluation of services based on experience against the expected outcome (Afthanorhan, Awang, Rashid, Foziah, & Ghazali, 2019). SERVQUAL, based on the founders' original submission, describes service quality as a form of attitude and a long-run overall evaluation of services (Al-neyadi, Abdallah, & Malik, 2018; Arsanam & Yousapronpaiboon, 2014). Service quality measures the overall performance or the perceived relative weakness or advantages of an institution and its services based on the judgment of the customer (Ahmed & Masud, 2014; Alkuwaiti et al., 2020; Almuraqab, 2016; Ameen, Al-Ali, Isaac, & Mohammed, 2020; Sharma, 2017).

Service quality is the level of services that are required to satisfy the customer. In health organisation, service quality is necessary for the any institutions to maintain its competitiveness amongst its peers. This is because health organisations world over are now becoming more competitive than ever before. This couple with declining support from government makes hospitals to look for ways of sustaining themselves. One of these ways is through improving their service quality. This is because service quality is an important parameter for measuring performance and excellence in any organisation.

The services health organisation offer varies into different ways. The quality of these services is therefore multidimensional. The most popular dimensions of service quality is the modified version of Parasuraman et al. (1985) of service quality dimensions. These are the tangibles, reliability, responsiveness, assurance and empathy. The tangibles are the physical facilities, equipment and material that can be seen and touched (Afthanorhan et al., 2019). They are the physical features of services. The service quality dimensions are discussed in the following section.

Service quality has different dimensions. The most popular is the dimensions offered by Parasuraman et al. (1985). The modified the earlier concept of service quality and proposed five dimensions. They are tangibles, reliability, responsiveness, assurance and empathy (Al-neyadi et al., 2018). These dimensions are discussed in the following sections.

2.1 Tangibles

Tangibles are the physical facilities, equipment and material that can be seen and touched (Zafiropoulos & Vrana, 2017). They are the physical features of services in an organisation. In health organisations, this involves all the physical facilities in the organisation such as consultation rooms, their sizes, conduciveness, lighting, ventilation; laboratories, wards, recreational facilities, equipment, physical appearance of the personnel and many more items (Alrubaiee & Alkaa'ida, 2015).

2.2 Reliability

Reliability as a dimension of services quality measures the performance of promised services by the service provider dependably and accurately. Reliability is a critical and an important factor in health organisations because it enables the them to track their promises and take remedial action when the outcome defers from the initial promise (El-hilali, Al-jaber, & Hussein, 2015).

2.3 Assurance

Assurance deals with the extent to which personnel are aware of the customers' needs and their courtesy as well as their capability to give confidence and trust. This construct measures the credibility, competence, courtesy and security of services offered by organisations (Pakurár, Haddad, Nagy, Popp, & Oláh, 2019). This is with having the right knowledge and delivering standard health procedure build the confidence and trust of the patients on the organisation and are therefore assured.

2.4 Responsiveness

Responsiveness is the readiness of staff and personnel to deliver prompt services and their willingness to promptly help customers. This is therefore the timeliness of service provision. Services rendered as at when due are happily received than that at a later time. Responsiveness in health organisation is the ability to solve patients' problems and issues immediately as they occur.

2.5 Empathy

Empathy, on the other hand, is giving individualized attention and care to the patients. In other words, empathy refers to personalized consideration given to patients as well as comprehending patients' needs and giving them expedient access to healthcare services (Alrubaiee & Alkaa'ida, 2015).

3. Data Collection

Research methodology in quantitative approach can falls into the experimental research design, quasi-experimental research design and survey research design. Thus, this study adopted survey research design. According to Fink (2009), surveys are data gathering means "used to describe, compare, or explain individual and societal knowledge, feelings, values, preference and behaviour". Survey research involves "quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population" (Creswell, 2014) which provide the basis for generalization of inferences drawn from the sample to the population. Survey method is a non-experimental quantitative design that seeks to describe reality.

Mathers, Fox & Hunn (2009) identified the benefits of survey research to include:

- Internal and external validity which allow inferences from sample to be generalized to the wider population,
- Cost effectiveness,
- Wider geographical sample coverage,
- Ethical advantage as well as flexibility.

The flexibility accommodates wide range of research questions; cost effectiveness reduces cost per response. The method also ensures true answers from respondents due to high level of anonymity which otherwise might not be possible due to respondents' sensitivity to their privacy and confidentiality.

The survey research design is considered best suited for this research because according to Creswell (2014), it is the most suitable research design when dealing with research problem that involves the investigation of issues that affect or influence an result, determining the best predictors of result and evaluating hypotheses and theories. Similarly, Fink (2006) argued that survey research is best suited in asking respondents questions about their perception because only the respondent can provide answer to such questions which are intrinsic in nature. He also maintained that survey research provides good statistics about feelings, experience, perceptions, values, habits and demographic characteristics, which are part and parcel of this research. Although these categories of data do not naturally appear in quantitative form, survey research method ensures their collection in quantitative form through designing the instrument to convert them into numerical scales (Muijs, 2004).

Therefore, the survey research technique is adopted because the nature of the research problem involves the identification of the COVID-19 patients' perception of service quality in healthcare organisations, For this survey research design adopted cross-sectional survey that indicates the portrait or description of things as they are at a single point in time. It involves the evaluation of experience and perception, which Mathers, Fox & Hunn (2009) says are described or explored by cross-sectional survey design. Therefore, the adoption of survey research design for the research is justifiable.

3.1 Population

In research, population refers to the entirety of all items, subjects, or members who share a set of one or more common characteristics. The word "population" refers to the entire group of persons, objects, or scores from which a sample is taken. Population must be specified for research to be useful. Agbola et al. (2003) defined population as the whole group, units or elements that fit a certain specification to be studied. This research is aimed to evaluate the COVID-19 patients' experience of healthcare services and their perception of service innovation and service quality in UAE healthcare organisations. The target population of this research is therefore all the COVID-19 discharged patients' in UAE. This is therefore the 506,020 COVID-19 patients already discharged in UAE (UAE Department of Health, 2021).

3.2 Sampling

Sampling technique is the method the investigator uses in choosing a representative part of the population for the objective of ascertaining the whole population through probabilistic or non-probabilistic manners (Agbola *et al*., 2003). This research will use probabilistic stratified random sampling to randomly select the sample from the population. Probabilistic sampling is defined as a sampling technique which is involves choosing a sample from a bigger population in accordance with the theory of probability. To be deemed as a probability sample, participants must be chosen randomly, the most important that everyone has equal likelihood of being selected in the research. In current study using probability sampling gives the greatest chance to get a small group of people (sample) that truly representative of the existing population (Brophy & Joseph, 1995).

Stratified random sampling is a method and type of probability random sampling. The method involves dividing the population into strata of populations that represent the whole population especially when the population has mixed characteristics, regarding overlapping, usually smaller groups arrange and classify by same characteristics such as age, gender, educational level and so on. Researchers must be aware about selecting subjects for each defined category randomly to ensure a well-rounded sample (McCombes, 2020). Stratified random sampling is recommended if the characteristics of the population is not uniform (Creswell, 2014).

This method is considered suitable because this study deals with a heterogenous population, so separating the population into subsets helps in obtaining more accurate and comprehensive statistical results. The study population will be stratified into the states in UAE and further into the hospitals that treat COVID-19 patients. The patients' will be subsequently randomly selected using simple random sampling from each of the hospitals.

3.3 Samples Size

Sample size is the magnitude of elements chosen from the population to be researched. According to Agbola *et al*. (2003), sample size can be determined according to the existing resources for gathering and handling the data; the volume of data to be gathered from every unit of the sample; the number of classes to be utilized for data analysis and the uniformity of the groups being surveyed. However, Mathers *et al.* (2009) stated that sample size is best determined by considering the expected response rate, confidence level and margin of error the researcher is willing to tolerate especially if the survey include the calculation of proportions and means.

Fowler (2009) recommended three considerations for obtaining sample size. They are margin of error, confidence level of percent and expected response. However, the Fowler (2009) did not take into account the population size. The formula for sample size determination offered by Krejcie & Morgan (1970) incorporated the entries in Fowler's table and the number of the population to be studied. The sample size for this study is 384 determined using Kredcie and Morgan (1970) table of sample size. Based on the population of COVID-19 patient discharged in UAE which is 506,020 as at 3rd May, 2021.

3.4 Questionnaire

Main contents of the questionnaire of this study are the service quality factors affecting the satisfying of the patients. A total of 25 items/factors of the service quality are clustered inti five domains which are Reliability; Responsiveness; Assurance; Empathy and Tangibles as in table 1.

Table 1 - List of service quality factors

Service Quality Domains	Code	Factors Descriptions
1. Reliability	QRL1	Efficiency of service procedures and appointment system
	QRL2	Acting with professionalism and accurate billing
	QRL3	Quality of medical treatment and doctor visiting as scheduled
	QRL4	Available and adequate visiting for patient family as scheduled
	QRL5	Provision of adequate rest time for patient as they promise
2. Responsiveness	QRS1	Level of quick medical treatment response when you need it
	QRS2	Level employee give clear and understandable information
	QRS3	Provision of good communication of the service right the first time
	QRS4	Level at which nurse in give prompt response to patient request
3. Assurance	QAS1	The rate at which you feel safe while in the treatment ward
	QAS2	The level of employees are politeness and friendliness in serving
	QAS3	Friendly security staff and safe parking area
	QAS4	Level of Doctors accurate ability to diagnose my infection
	QAS5	Good communication among doctors, staff, and patients
4. Empathy	QEM1	Level of carefulness during treating and examining you
	QEM2	Level of employee dedicated attention to me and my family
	QEM3	No social status discrimination to the patient
5. Tangibles	QTA1	Level of physical facilities and visually appealing medical instrument
	QTA2	Suitable temperature at the hospital's facilities
	QTA3	Adequate fresh water supply at the hospital
	QTA4	Cleanliness and adequate supplies for each ward
	QTA5	Clean and well-maintained toilet
	QTA6	Employee neat-appearing
	QTA7	There is a provision of specific need to patients
	QTA8	Sufficient and convenient parking area

With these factors/items the respondents were requested to gauge the level of satisfaction that they have received/experienced during their stay in the hospital using 5-points Likert's scale.

4. Data analysis and results

4.1 Demography of the respondents

A total of 384 respondents participated in the questionnaire survey who are COVID-19 patients discharged from UAE healthcare system. The demographic items of these respondents are as in table 2

Table 2 - Demography of the respondents

Demography	Items	Percentage
Gender of respondents	Male	53%
	Female	47%
Age of respondents	20 -30 years	20%
	31 to 40 years	19%
	41 to 50 years	21%
	Equal and above 51 years	40%
Length of stay in hospital	2 to 5days	30%
	6 to 10 days	50%
	More than 10 days	20%

The table indicates that the respondents' gender participated in this survey is almost the same percentages. While most of the respondents are having aged of equal and more than 51 years as Covid19 is more vulnerable to older people. In term of staying in the hospital, most of the respondents stay around 6 to 10 days.

4.2 Characteristic of the collected Data

This subsection provides the results of the descriptive analysis which are normality, reliability and mean score according to the factors in the questionnaire. These service quality factors are grouped as reliability, responsiveness,

assurance, empathy, and tangible dimensions. The results of service quality factors are presented in the following in table 3 below.

Table 3 - Result for service quality factors

Items	Statistic	Normality		Factor loading	VIF	Tolerance	Cronbach's alpha
		Skewness	Kurtosis				
Reliability					**.573**	**1.745**	**.396***
QRL1	3.22	-.174	-1.110	.814			
QRL2	3.93	.155	-1.862	.962			
QRL3	3.26	-.315	-1.058	.923			
QRL4	3.93	.155	-1.862	.962			
QRL5	3.52	-.576	-.881	.922			
Responsiveness					**.134**	**7.461**	**.719**
QRS1	4.15	-1.091	.359	.863			
QRS2	3.74	-.954	-.325	.964			
QRS3	4.04	-1.196	.623	.928			
QRS4	3.63	-.587	-.767	.971			
Assurance					**.330**	**3.029**	**.848**
QAS1	3.11	-.819	.102	.927			
QAS2	2.74	-.219	-1.229	.904			
QAS3	3.15	-1.145	.172	.936			
QAS4	3.22	-.120	-.314	.925			
QAS5	3.63	.401	-.750	.936			
Empathy					**.431**	**2.319**	**.932**
QEM1	3.33	-.453	-.921	.919			
QEM2	3.37	-.528	-.711	.974			
QEM3	3.41	-.605	-.465	.971			
Tangibles					**.347**	**2.883**	**.848**
QTA1	3.41	-.605	-.465	.971			
QTA2	3.56	-.187	-.376	.953			
QTA3	3.30	-.285	-1.172	.968			
QTA4	3.33	-.226	-1.191	.951			
QTA5	3.52	-.694	-.081	.974			
QTA6	3.44	-.178	-1.483	.931			
QTA7	3.81	-.698	-.026	.926			
QTA8	3.89	-.923	-.374	.901			

Table 2 shows the pilot result for the service quality construct. The service quality construct is a higher order construct with 5 dimensions. The dimensions are reliability, responsiveness, assurance, empathy, and tangible. The reliability sub-construct has mean values ranging from 3.22 to 3.93. The values of skewness and kurtosis were all within the threshold of -/+2 (George & Mallery, 2010). All the variables under the construct have strong factor loadings which cumulatively which are considered satisfactory. The multicollinearity of the construct was assessed by VIF and tolerance. The reliability sub-construct has VIF and tolerance of 0.573 and 1.745 respectively. The reliability of the construct was assessed using Cronbach's alpha coefficient which produced a value of 0.396 which is below the recommended value of 0.7. However, a look at the Cronbach's alpha if item is deleted shows that deletion of item QRL1 will improve the alpha to the required threshold. Accordingly, the question under the item will be modified prior to the main survey.

The responsiveness sub-construct has mean values ranging from 3.63 to 4.15. The values of skewness and kurtosis were all within the threshold of -/+2 (George & Mallery, 2010). All the variables under the construct have strong factor loadings which cumulatively which are considered satisfactory. The multicollinearity of the construct was assessed by VIF and tolerance. The reliability sub-construct has VIF and tolerance of 0.134 and 7.461 respectively. The multicollinearity is within the recommended level. The reliability of the construct was assessed using Cronbach's alpha coefficient which produced a value of 0.719 which is above the recommended value of 0.7.

The assurance sub-construct has mean values ranging from 2.74 to 3.63. The values of skewness and kurtosis were all within the threshold of -/+2 (George & Mallery, 2010). All the variables under the construct have strong factor loadings which cumulatively which are considered satisfactory. The multicollinearity of the construct was assessed by VIF and tolerance. The reliability sub-construct has VIF and tolerance of 0.330 and 3.029 respectively. The

multicollinearity is within the recommended level. The reliability of the construct was assessed using Cronbach's alpha coefficient which produced a value of 0.848 which is above the recommended value of 0.7.

4.3 Level of satisfaction

In this section, the five domains/groups of the service quality which are Reliability; Responsiveness; Assurance; Empathy and Tangibles are analysed on its performance are evaluated for its degree/level of satisfaction using the mean score value of the groups and compared with criteria suggested by Majid & McCaffer (1997) as in Table 4.

Table 4 - Evaluation criteria

Likert Scale	Description of the scale	Mean score interval	Description of the score
1	Strongly disagree	1.00-1.80	Very low
2	Disagree	1.81-2.60	Low
3	Neutral	2.61-3.40	Moderate
4	Agree	3.41-4.20	High
5	Strongly agree	4.21-5.00	Very high

Using the evaluation criteria as in table 3, the evaluation on the performance of each domain of the service quality is as in table 5.

Table 5 - Results of satisfaction level

Groups/domains of service quality	Mean score	Level of satisfaction
Reliability	3.572	**High**
Responsiveness	3.890	**High**
Assurance	3.170	**Moderate**
Empathy	3.370	**Moderate**
Tangibles	3.533	**High**

Table 5 indicates that 3 domains which are reliability, responsiveness and tangibles are having high level of satisfaction according to the respondent's perspective in experiencing the healthcare during COVID19 treatment. However, two of the domains which are assurance and empathy are having moderate satisfaction only.

4.4 Ranking analysis

In this section, the five domains/groups of the service quality which are Reliability; Responsiveness; Assurance; Empathy and Tangibles are analysed on its performance are evaluated based on the mean score of each domain to determine the rank of each service quality domains as in Fig. 1

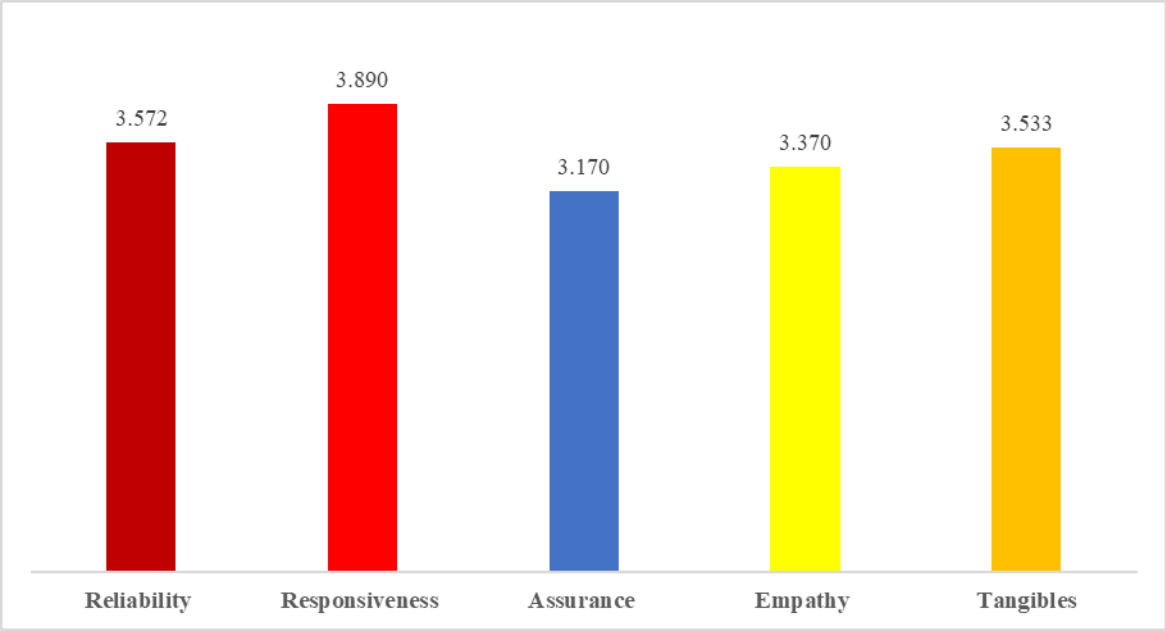

Fig. 1 – Ranking of service quality domains

Fig. 1 shows that the responsiveness domain is ranked first with the highest score of 3.890, followed by reliability domain with mean score of 3.572, then tangibles domain with 3.533, empathy domain with 3.370 and finally assurance domain with 3.170.

5. Conclusion

This paper has presented the investigation of the service quality of healthcare system in UAE. The respondents who were the users of the healthcare system and are requested to rate 25 factors of service quality of the healthcare using 5-points Likert scale of level of satisfaction on the service quality of the system. The data was collected from 384 respondents who are COVID-19 patients discharged from UAE healthcare system that participated in the questionnaire survey. The analysis on the collected data found that three domains which are reliability, responsiveness and tangibles are having high level of satisfaction according to the respondent's perspective in experiencing the healthcare during COVID19 treatment. In term of ranking analysis, the responsiveness domain is ranked first with the highest score of 3.890, followed by reliability domain with mean score of 3.572, then tangibles domain with 3.533, empathy domain with 3.370 and finally assurance domain with 3.170. The findings from this study helps the healthcare practitioners in improving their service quality to the patients.

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