# Testing SERVQUAL Scale Items in Vaccination Management System: A Case Study in Bangladeshi Hospitals

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**Abstract**

Since the outbreak of the Covid19 pandemic in late 2019, the global economy has been confronted with constant challenges and paradigm shifts. The pandemic posed a massive challenge to Bangladesh's healthcare system, which is already plagued by numerous problems. Here, the ratio of healthcare workers to patients is significantly lower than the international average. Having observed a lack of research focusing on the service quality of the various Covid19 vaccination points, the researchers conducted this study which aims to use a SERVQUAL framework to examine customer experiences obtaining the Covid19 vaccine in Bangladeshi hospitals. The primary data for this study were collected using both qualitative and quantitative methodologies. Initially, participants in a focus group discussion expressed their appreciation for the digital registration procedure. In addition, the majority praised the user-friendly layout of the registration website and app. On the other hand, the incapacity of some hospital staff to respond to individual questions was brought up during the conversation. Following the focus group discussion, selected people over the age of 40 who had received at least one dose of the Oxford/AstraZeneca COVID-19 vaccination were given a self-administered questionnaire, to which the researchers got 131 responses. Although the responses to a few of the research constructs were mainly favorable, the data reveal some space for improvement in terms of physical facilities and medical equipment. The survey also found that many patients were dissatisfied with the lack of empathy demonstrated by staff members at vaccination clinics. Some respondents further felt that there is a lack of media presence at the vaccination points.

**Index Terms**— COVID-19, SERVQUAL, Reliability, Accessibility, Tangibility, Responsiveness, Communication, Assurance, Empathy, Discipline, and Perceived Cost.

## I. INTRODUCTION

Since the advent of the Covid19 pandemic in late 2019, the global economy along with all its components has been facing continuous challenges and paradigm shifts in its entirety. Bangladesh is one of the countries which are suffering severely in terms of an increase in unemployment and a halt in GDP growth. However, Bangladesh did manage to fight back by handling the management of vaccination with great finesse compared to many other countries in the global arena. Since 27th January, 2021 up to the time of data collection for this research, more than 7 million Bangladeshi citizens have registered for the

vaccination process to be provided by numerous vaccination centers across the major cities of Bangladesh. Among these individuals, 5.8 million citizens received the first shot of Oxford/AstraZeneca COVID-19 vaccine from the designated vaccine centers established by the Government of Bangladesh (Das and Weiwei, 2021). [1]

Even though the statistics portray a trend of positivity towards the country's fight against the Coronavirus (COVID-19 (Coronavirus) Response, 2022) historically, Bangladesh has faced various issues in the healthcare system, including poor management in healthcare institutions, a lack of capacity to meet the needs of a considerable number of patients, and a shortage of qualified healthcare staff, to name a few. However, during a worldwide pandemic, it may be critical to providing greater service quality throughout the country's healthcare sector by reducing overall system service quality gaps. The research focused on respondents who were netizens above the age of 40 and has taken at least one shot of the Oxford/AstraZeneca COVID-19 vaccine.

## II. OPERATIONAL DEFINITION

a. According to the World Health Organization (WHO), hospitals are an integral part of a healthcare system which is required to provide continuous services for acute as well as complex conditions.

b. SERVQUAL model which is an empiric model developed by Zeithaml, Parasuraman and Berry divides the consumers' service quality needs into five dimensions. These dimensions are reflective of what constitutes the basis of patient satisfaction: For example: i) Reliability: The dimension which dictates whether the service providers are able to perform the service which was promised to the consumers with accuracy and dependability. ii) Assurance: The dimension in which the service providers are able to gain the consumers' trust by means of their knowledge, courtesy and competence. iii) Tangibles: The quality of the physical facilities, equipment etc. which complements quality service delivery. iv)

Empathy: The dimension in which the service providers communicate with the consumers with understanding, care and individualized attention. v) Responsiveness: The service providers' spontaneous willingness to deliver their service promptly and efficiently.

c. Service Characteristics are the some of the defining attributes of services that distinguishes itself from a pure tangible good. Understanding these attributes are vital to any research aimed at improving service quality. The characteristics are i) Intangibility - which indicates that services can provide value to the consumer without any tangible evidence; ii) Perishability – is the characteristic which describes the way that the service cannot be stored for consumers' later usage; iii) Inseparability – is the attribute of service which explains that the production services cannot be separated from the consumption as both of these events occur simultaneously; iv) Heterogeneity – signifies the fact that each consumption of service varies with each consumption; it can range from the variability of the same service provided by different providers to the variation of the same service provided by the same individual or organization(Moeller, 2010). [2]

## III. LITERATURE REVIEW

The SERVQUAL concept has been used in research on the hospital industry. Siddiqua and Choudhury (2014) [3] used an adapted SERVQUAL survey to measure the quality of service in private hospitals in Dhaka City. Rahman and Kutubi's (2013) [4] study was based on patient satisfaction with private hospitals in the country. The questionnaire they used was based on eleven dimensions of customer satisfaction, out of which they found eight to have any mentionable impact. These were 1. Empathy, 2. Responsiveness, 3. Reliability, 4. Communication, 5. Tangibles, 6. Process features, 7. Assurance, 8. Cost. Siddiqui and Khandaker (2007) [5] compared the service provided by three types of hospitals

- Public, Private and Foreign. They initially used nine variables— reliability, accessibility, tangibility, responsiveness, communication, assurance, empathy, discipline, and perceived cost, of the research tool, in a SERVQUAL type framework. Later, they finalized eight variables— availability of physicians, empathy of nurses, empathy of physicians, assurance/competence of physicians, availability of drugs, responsiveness of nurses, tangibility, and perceived cost.

## IV. JUSTIFICATION OF THIS RESEARCH

Various studies have concluded that medical and non-medical healthcare professionals are insufficient. (The Medical Practice and Private Clinics and Laboratories – Regulation-Ordinance-1982 of Bangladesh) The ratio of healthcare personnel to patients is substantially below the international level. Furthermore, another research study in a public hospital in Dhaka city revealed that the quality of a hospital's service and patient happiness are inextricably linked (Hossain et al., 2017).

Although there appears to be widespread interest and understanding of vaccines, no research or data linking SERVQUAL and customer experiences in Bangladeshi hospitals has been found. On the other hand, hospitals and policymakers understand how individuals are treated in hospitals, particularly during vaccinations.

## V. RESEARCH METHODOLOGY

*Methodology*: Both qualitative and quantitative methods were used for the purposes of the study. While the quantitative methods enabled the researchers to understand the patients' points of view on pre-determined constructs, the qualitative method by means of a Focus Group Discussion, opened the doors to pointing out more experiential aspects from the patients' perspectives. Both of the research techniques were carried out to explore the patients' perceptions on the service quality provided by the staff at the Covid vaccination center.

*Sampling*: The target respondents were netizens above the age of 40, who has taken at least one shot of the Oxford/AstraZeneca COVID-19 vaccine. Because of time constraints and the specificity of the target group of patients, the researchers managed to survey 131 respondents that fit the criteria of the target patient profile.

*Data Collection:* The survey was being conducted by means of a self-administered questionnaire which was prepared in the Google Forms platform and distributed to the respondents by online communication mediums. The questionnaire comprised 20 questions which were designed to reflect and measure the consumer/patient perceptions with respect to the five dimensions of the SERVQUAL. Each respondent was required to answer the questions on a seven-point Likert scale which ranged from 1 (strongly disagree) to 7 (strongly agree). For the purposes of qualitative research, a focus group discussion was carried out among 9 persons.

## VI. FINDING AND ANALYSIS

Based on the analysis of the chosen SERVQUAL variables, the Cronbach's Alpha for each resulted in a greater value or very close to 0.70 which shows that the measurement scale and the research model is reliable. Based on the calculations, the SERVQUAL Factors, i.e., Reliability ($\alpha=0.695$), Assurance ($\alpha=0.785$), Tangibles ($\alpha=0.743$), Empathy ($\alpha=0.728$), and Responsiveness ($\alpha=0.729$) have valid $\alpha$ values which implies that the reliability of the model is acceptable.

The mean scores from the 7-point Likert Scale data show all of the variables being responded to scores greater than zero, indicating an overall inclination towards agreement among the respondents in terms of all the factors and variables. However, some of the variables under the factors 'Tangibles' (TN-1=0.36; TN-2=0.52; TN-4=0.24) and 'Empathy' (EM-2=0.94; EM-3=0.84) shows the lowest mean scores in responses; the resulting scores stipulate that some of the respondents leaned towards disagreement and neutrality. (SPSS Outputs are provided in the Appendix).

### Demographic Profile of Focus Group Discussion

There was a total of 9 participants in the Focus group discussion. Among them 5 were male and 5 females. The group consists of people working in private sectors, housewives, retired personnel, and aged between 40 - 70.

### Key findings from Focus Group Discussion

The focus group discussion was conducted prior to conducting the survey. This helped to get some more in-depth qualitative data on the service quality provided by the covid vaccination centers. From the discussion we found that for most of the participants who are aged and not skilled in using smartphone or computer took help from their children or relatives to register for the vaccine in Surokkha Website or app. The service receivers who registered themselves were very pleased with the Surrokkha Website and App, especially with the user-friendly interface and simplicity.

Regarding the service providers, the participants mentioned that most of the time the staff at vaccine centers like nurses, receptionists, volunteers and law enforcement personnel were very cooperative, caring, passionate and treated them well. The participants also highly appreciated that the registration process was digital. They opined that the respective authority was able to keep the process unbiased and very systematic due to that. All the citizens had equal opportunities due to introducing this 'Surokkha App'.

However, from the discussion it was evident that there are certainly some room for improvement. The participants suggested there could be some kind of written instructions in the entrance guiding them about the location and procedure. They also thought the staff were not being able to respond to individual questions, like whether someone should take the vaccine if he/she is already covid positive. Also, according to the participants, the vaccine campaign needs to be more aggressively advertised through media to raise awareness all over the country.

### Demographic Profile of Survey Respondents

A total of 131 respondents participated in the online survey who have received at least one dose of Covid Vaccine from a vaccination center in Bangladesh. Among them 54 (41.22%) were female and 77 (58.78%) males.

**Table A1:** *Frequency and Percentage by Gender*

| Gender | Freq. | Percent | Cum. |
|--------|-------|---------|------|
| Female | 54 | 41.22 | 41.22 |
| Male | 77 | 58.78 | 100.00 |
| Total | 131 | 100.00 | |

Table A2 shows that total 44 (33.59%) respondents were below 40 years age, which is highest proportion. 24 (18.32%) were 40-50 years age, 35 (26.72%) were 50-60 years, 23 (17.56%) were 60-70 years and 5 (3.82%) respondents were above 70 years age.

**Table A2:** *Frequency and Percentage by Age*

| Age | Freq. | Percent | Cum. |
|-----|-------|---------|------|
| Below 40 Years | 44 | 33.59 | 33.59 |
| 40-50 Years | 24 | 18.32 | 51.91 |
| 50-60 Years | 35 | 26.72 | 78.63 |
| 60-70 Years | 23 | 17.56 | 96.18 |
| Above 70 Years | 5 | 3.82 | 100.00 |
| Total | 131 | 100.00 | |

Table A3 shows that 14 (10.69%) respondents have HSC level education, 38 (29.01%) were graduates, 55 (41%) were post graduates which is the highest proportion, and 24 (18%) were other like HSC or doctorate degrees.

**Table A3:** *Educational Qualification*

| Educational Qualification | Freq. | Percent | Cum |
|---------------------------|-------|---------|-----|
| HSC Level I | 14 | 10.69 | 10.69 |
| Graduate | 38 | 29.01 | 39.69 |
| Post Graduate | 55 | 41.98 | 81.68 |
| Other | 24 | 18.32 | 100.00 |
| Total | 131 | 100.00 | |

### Cronbach's Alpha

Based on the analysis of the chosen SERVQUAL variables, the Cronbach's Alpha for each resulted in a greater value or very close to 0.70 which shows that the measurement scale and the research model is reliable. Based on the calculations, the SERVQUAL Factors, i.e., Reliability (α=0.695), Assurance (α=0.785), Tangibles (α=0.743), Empathy (α=0.728), and Responsiveness (α=0.729) have valid α values which implies that the reliability of the model is acceptable.

The mean scores from the 7-point Likert scale data show all of the variables being responded has scores greater than zero, indicating an overall inclination towards agreement among the respondents in terms of all the factors and variables. However, some of the variables under the factors 'Tangibles' (TN-1=0.36; TN-2=0.52; TN-4=0.24) and 'Empathy' (EM-2=0.94; EM-3=0.84) shows the lowest mean scores in responses; the resulting scores stipulate that some of the respondents leaned towards disagreement and neutrality. (SPSS Outputs are provided in the Appendix).

**Table:** *Cronbach's Alpha on each SERVQUAL Factor*

| SERVQUAL Factors | Cronbach's Alpha |
|---|---|
| Reliability | 0.695 |
| Assurance | 0.785 |
| Tangibility | 0.743 |
| Empathy | 0.728 |
| Responsiveness | 0.729 |

### Reliability

93% of the respondents think Staff at covid vaccine center keep their service promise, 89% think Staff at vaccine center show strong interest to solve inconvenience. 90% of respondents think staff at vaccine centers perform service correctly the first time, 77% Think Staff at vaccine centers insist on error free service.

So, in the reliability parameter, there's scope for improvement in insisting on error free service.

| 1. Staff at covid vaccination center keep their service promise | Freq. | Percent | Cum. |
|---|---|---|---|
| Strongly Disagree | 1 | 0.76 | 0.76 |
| Somewhat Disagree | 1 | 0.76 | 1.53 |
| Neutral | 5 | 3.82 | 5.34 |
| Somewhat Agree | 9 | 6.87 | 12.21 |
| Agree | 63 | 48.09 | 60.31 |
| Somewhat Agree | 52 | 39.69 | 100.00 |
| Total | 131 | 100.00 | |

| 2. Staff at vaccine center show strong interest to solve inconvenience | Freq. | Percent | Cum. |
|---|---|---|---|
| Disagree | 2 | 1.53 | 1.53 |
| Somewhat Disagree | 3 | 2.29 | 3.82 |
| Neutral | 8 | 6.11 | 9.92 |
| Somewhat Agree | 21 | 16.03 | 25.95 |
| Agree | 70 | 53.44 | 39.39 |
| Somewhat Agree | 27 | 20.61 | 100.00 |
| Total | 131 | 100.00 | |

| 3. Staff at vaccine center perform service correctly the first time | Freq. | Percent | Cum. |
|---|---|---|---|
| Disagree | 1 | 0.76 | 0.76 |
| Somewhat Disagree | 4 | 3.05 | 3.82 |
| Neutral | 7 | 5.34 | 9.16 |
| Somewhat Agree | 8 | 6.11 | 15.27 |
| Agree | 71 | 54.20 | 69.47 |
| Somewhat Agree | 40 | 30.53 | 100.00 |
| Total | 131 | 100.00 | |

| 4. Staff at vaccine center insist on error free service | Freq. | Percent | Cum. |
|---|---|---|---|
| Strongly Disagree | 1 | 0.76 | 0.76 |
| Disagree | 7 | 5.34 | 6.11 |
| Somewhat Disagree | 6 | 4.58 | 10.69 |
| Neutral | 14 | 10.69 | 21.37 |
| Somewhat Agree | 19 | 14.50 | 35.88 |
| Agree | 62 | 47.33 | 83.21 |
| Strongly Agree | 22 | 16.79 | 100.00 |
| Total | 131 | 100.00 | |

***Keeping service Promise: two-sample t test by Gender***

The mean for females is 6.25 and for male it is 6.16, where combined mean is 6.20. So, the mean is higher for females by 0.090. So, females are agreeing more in the statement staff at covid vaccine center kept their service promise. However, the difference in t test is 0.27 or 27%, so we can say this is not statistically significant.

***Table:*** *Keeping service promise t test with equal variance by gender Two-sample t test with equal variances*

| Group | Obs. | Mean | Std. Err. | Std. Dev. | [95% Conf.] | Interval |
|---|---|---|---|---|---|---|
| Female | 54 | 6.259259 | .0922776 | .678099 | 6.074174 | 6.444345 |
| Male | 77 | 6.168831 | .1084322 | .9514891 | 5.074174 | 6.384793 |
| Com. | 131 | 6.206107 | .0740709 | .8477804 | 6.059566 | 6.352647 |
| Diff | | .0904281 | .1508515 | | -.2080353 | .3888914 |

Diff=mean(female)-mean (male)

t =0.5995

Ho: diff = 0                                                degrees of freedom          =    129

Ha: diff < 0                    Ha: diff ! = 0    Ha    : diff >0

Pr (T < t) = 0.7250

pr (|T| > |t| = 0.5499        Pr (T < t) = 0.2750

***Responsiveness***

80% respondents agree that Staff at the vaccine center inform citizens when service will be provided. 85% agree Staff at vaccine center give citizen prompt service, 85% agree Staff at vaccine center are always willing to help citizen, 69% think Staff at vaccine center are never too busy to respond to patients' requests. So, from the above we can see that 31% of respondents feel neutral or think that staff look too busy to respond to patients' requests.

| 5. Staff at vaccine center inform citizen when service will be provided | Freq. | Percent | Cum. |
|---|---|---|---|
| Strongly Disagree | 3 | 2.29 | 2.29 |
| Somewhat Disagree | 8 | 6.11 | 8.40 |
| Neutral | 13 | 9.92 | 18.32 |
| Somewhat Agree | 7 | 5.34 | 23.66 |
| Agree | 65 | 49.62 | 73.28 |
| Strongly Agree | 35 | 26.72 | 100.00 |
| Total | 131 | 100.00 | |

| 6. Staff at vaccine center give citizen prompt service | Freq. | Percent | Cum. |
|---|---|---|---|
| Disagree | 2 | 1.53 | 1.53 |
| Somewhat Disagree | 5 | 3.82 | 5.34 |
| Neutral | 11 | 8.40 | 13.74 |
| Somewhat Agree | 14 | 10.69 | 24.43 |
| Agree | 70 | 53.44 | 77.86 |
| Strongly Agree | 29 | 22.14 | 100.00 |
| Total | 131 | 100.00 | |

| 7. Staff at vaccine center are always willing to help citizen | Freq. | Percent | Cum. |
|---|---|---|---|
| Disagree | 1 | 0.76 | 0.76 |
| Somewhat Disagree | 3 | 2.29 | 3.05 |
| Neutral | 13 | 9.92 | 12.98 |
| Somewhat Agree | 22 | 16.79 | 29.77 |
| Agree | 66 | 50.38 | 80.15 |
| Strongly Agree | 26 | 19.85 | 100.00 |
| Total | 131 | 100.00 | |

| 8. Staff at vaccine center are never too busy to respond to patients' requests | Freq. | Percent | Cum. |
|---|---|---|---|
| Strongly Disagree | 1 | 0.76 | 0.76 |
| Disagree | 11 | 8.40 | 9.16 |
| Somewhat Disagree | 10 | 7.63 | 16.79 |
| Neutral | 18 | 13.74 | 30.53 |
| Somewhat Agree | 21 | 16.03 | 46.56 |
| Agree | 58 | 44.27 | 90.84 |
| Strongly Agree | 12 | 9.16 | 100.00 |
| Total | 131 | 100.00 | |

*Assurance*

Four questions were asked to measure the assurance parameter. 80% participants agreed that the behavior of the staff gives confidence, 81% agreed that stuffs were consistently courteous, 65% agreed that citizens feel safe sharing thoughts with the stuff, and 65% agreed that the stuffs have sufficient knowledge to answer queries.

From the responses we can observe that there is scope for improvement training staff so that citizens feel more safe sharing thoughts with the staff. Also, additional training can be provided on increasing knowledge of the staff.

| 9. The behavior of the staff at vaccine center gives confidence to the service | Freq. | Percent | Cum. |
|---|---|---|---|
| Strongly Disagree | 1 | 0.76 | 0.76 |
| Disagree | 4 | 3.05 | 3.82 |
| Somewhat Disagree | 5 | 3.82 | 7.63 |
| Neutral | 17 | 12.98 | 20.61 |
| Somewhat Agree | 19 | 114.50 | 35.11 |
| Agree | 58 | 44.27 | 79.39 |
| Strongly Agree | 27 | 20.61 | 100.00 |
| Total | 131 | 100.00 | |

| 10. Citizen feel safe in sharing thoughts with the staff at vaccine center | Freq. | Percent | Cum. |
|---|---|---|---|
| Strongly Disagree | 2 | 1.53 | 1 |
| Disagree | 3 | 2.29 | 3.82 |
| Somewhat Disagree | 9 | 6.87 | 10.69 |
| Neutral | 30 | 22.90 | 33.59 |
| Somewhat Agree | 20 | 15.27 | 48.85 |
| Agree | 50 | 38.17 | 87.02 |
| Strongly Agree | 17 | 12.98 | 100.00 |
| Total | 131 | 100.00 | |

| 11. Staff at vaccine center are consistently courteous to patients | Freq. | Percent | Cum. |
|---|---|---|---|
| Strongly Disagree | 1 | 0.76 | 0.76 |
| Disagree | 2 | 1.53 | 2.29 |
| Somewhat Disagree | 5 | 3.82 | 6.11 |
| Neutral | 16 | 12.21 | 18.32 |
| Somewhat Agree | 19 | 14.50 | 32.82 |
| Agree | 69 | 52.67 | 82.50 |
| Strongly Agree | 19 | 14.50 | 100.00 |
| Total | 131 | 100.00 | |

| 12. Staff at vaccine center have sufficient knowledge to answer queries | Freq. | Percent | Cum. |
|---|---|---|---|
| Strongly Disagree | 1 | 0.76 | 0.76 |
| Disagree | 5 | 4.82 | 4.58 |
| Somewhat Disagree | 3 | 2.29 | 6.87 |
| Neutral | 35 | 26.72 | 33.59 |
| Somewhat Agree | 26 | 19.85 | 53.44 |
| Agree | 50 | 38.17 | 91.60 |
| Strongly Agree | 11 | 8.40 | 100.00 |
| Total | 131 | 100.00 | |

## Empathy

72% respondents think the stuffs gave individual attention to them, 77% think the opening hour of vaccination center is convenient for all, 61% think the stuff gave priority to citizen's interest, and 64% think the stuffs understand their specific requirements, so, we can see that there's scope for improvement and training to increase service seekers perception on priority provided to them and specific requirement.

| 13. Staff at vaccine center give individual attention to service receiver | Freq. | Percent | Cum. |
|---|---|---|---|
| Strongly Disagree | 1 | 0.76 | 0.76 |
| Disagree | 7 | 5.34 | 6.11 |
| Somewhat Disagree | 9 | 6.87 | 12.98 |
| Neutral | 17 | 12.98 | 25.95 |
| Somewhat Agree | 35 | 26.72 | 52.67 |
| Agree | 50 | 38.93 | 91.60 |
| Strongly Agree | 11 | 8.40 | 100.00 |
| Total | 131 | 100.00 | |

| 14. Staff at vaccine center give priority to citizen's interest | Freq. | Percent | Cum. |
|---|---|---|---|
| Strongly Disagree | 1 | 0.76 | 0.76 |
| Disagree | 5 | 3.82 | 4.58 |
| Somewhat Disagree | 9 | 6.87 | 11.45 |
| Neutral | 34 | 25.95 | 27.40 |
| Somewhat Agree | 30 | 22.90 | 60.31 |
| Agree | 41 | 31.30 | 91.60 |
| Strongly Agree | 11 | 8.40 | 100.00 |
| Total | 131 | 100.00 | |

| 15. Staff at vaccine center understand citizen's specific requirements | Freq. | Percent | Cum. |
|---|---|---|---|
| Disagree | 9 | 6.87 | 6.87 |
| Somewhat Disagree | 13 | 9.92 | 16.79 |
| Neutral | 23 | 17.56 | 34.35 |
| Somewhat Agree | 39 | 29.77 | 64.12 |
| Agree | 39 | 29.77 | 93.89 |
| Strongly Agree | 8 | 6.11 | 100.00 |
| Total | 131 | 100.00 | |

| 16. Staff at vaccine center understand citizen's specific requirements | Freq. | Percent | Cum. |
|---|---|---|---|
| Disagree | 13 | 9.92 | 9.92 |
| Somewhat Disagree | 9 | 6.87 | 16.79 |
| Neutral | 6 | 4.58 | 21.37 |
| Somewhat Agree | 9 | 6.87 | 28.24 |
| Agree | 69 | 52.67 | 80.92 |
| Strongly Agree | 25 | 19.08 | 100.00 |
| Total | 131 | 100.00 | |

## Tangibles

70% of the respondents think the physical facilities are visually appealing, 80% think the vaccine centers have a neat appearance and outfit.

50% of the respondents think vaccination centers have modern looking equipment, 42% disagree and 16% were neutral.

Only 44% think the vaccine centers have sufficient presence in the media, 27% were neutral and 27% disagree.

| 17. Staff at vaccine center have modern looking equipment | Freq. | Percent | Cum. |
|---|---|---|---|
| Strongly Disagree | 4 | 3.05 | 3.05 |
| Disagree | 22 | 16.79 | 19.85 |
| Somewhat Disagree | 16 | 12.21 | 32.06 |
| Neutral | 22 | 16.79 | 48.85 |
| Somewhat Agree | 27 | 20.61 | 69.47 |
| Agree | 28 | 21.37 | 90.84 |
| Strongly Agree | 12 | 9.16 | 100.00 |
| Total | 131 | 100.00 | |

| 18. The physical facilities at vaccine centers are visually appealing | Freq. | Percent | Cum. |
|---|---|---|---|
| Strongly Disagree | 7 | 5.34 | 5.34 |
| Disagree | 15 | 11.45 | 16.79 |
| Somewhat Disagree | 15 | 11.45 | 28.24 |
| Neutral | 24 | 18.32 | 46.56 |
| Somewhat Agree | 19 | 14.50 | 61.07 |
| Agree | 38 | 29.01 | 90.08 |
| Strongly Agree | 13 | 9.92 | 100.00 |
| Total | 131 | 100.00 | |

| 19. The physical facilities at vaccine centers are visually appealing | Freq. | Percent | Cum. |
|---|---|---|---|
| Strongly Disagree | 1 | 0.76 | 0.76 |
| Disagree | 6 | 4.58 | 5.34 |
| Somewhat Disagree | 5 | 3.82 | 9.16 |
| Neutral | 14 | 10.69 | 19.85 |
| Somewhat Agree | 24 | 18.32 | 38.17 |
| Agree | 53 | 40.46 | 78.63 |
| Strongly Agree | 28 | 21.37 | 100.00 |
| Total | 131 | 100.00 | |

| 20. The physical facilities at vaccine centers are visually appealing | Freq. | Percent | Cum. |
|---|---|---|---|
| Strongly Disagree | 6 | 4.58 | 4.58 |
| Disagree | 20 | 15.27 | 19.85 |
| Somewhat Disagree | 10 | 7.63 | 27.48 |
| Neutral | 36 | 27.48 | 54.96 |
| Somewhat Agree | 28 | 21.37 | 76.34 |
| Agree | 21 | 16.03 | 92.37 |
| Strongly Agree | 10 | 7.63 | 100.00 |
| Total | 131 | 100.00 | |

## VII. DISCUSSION

The growing need for efficient management of proper Covid19 vaccination necessitates the undergoing of thorough research in measuring the service quality of vaccination centers in Bangladesh. This research was conducted to assess the patients' perspectives on the service quality dimensions of the Covid vaccination centers. This SERVQUAL data analysis depicts the current scenario of these centers and methodically estimates the quality of overall service provided by the staff from the patients' perspectives. The results of this study may be used to determine the gaps in service quality and in turn, improve upon the patient satisfaction by means of personnel training, increasing the amount of care and empathy in patient-staff interactions, and the procurement of up-to-date equipment for the medical centers. The overall SERVQUAL study is aimed to enhance the quality of the hospitals and clinics which are dedicated in treatment and vaccination of Covid19.

## VIII. RECOMMENDATION

Analyzing the findings of the research, it suggested that the following steps be taken by the vaccination centers in order to ensure enhanced quality and higher rates of consumer satisfaction: a) updated equipment must be procured in the centers as well as the overall clinic/hospital where the vaccination center is situated, b) the physical facilities should be improved to ensure a clean and hygienic

environment for the patients, c) the vaccination points and the healthcare organizations should have a greater media presence, the necessary updates relating to the pandemic should always be displayed in their websites as well as the physical locations, d) the staff members who are assigned for vaccination purposes should be better trained so that they can empathize with the patients and understand their individual needs and requirements during their visit at the center.

Following is a list of recommendations based on the research findings to ensure improved quality and higher rates of client satisfaction in covid vaccination centers:

a)  Staff members responsible for vaccinations should be better trained to empathize with patients and understand their unique needs and requirements during their stay at the center.

b)  Physical facilities should be enhanced to ensure that service seekers are clean and sanitary.

c)  More modern technology is required in the center.

d)  The vaccine campaign should have a more substantial media presence, raising public awareness and encouraging individuals to be vaccinated at neighboring vaccination clinics.

## IX. CONCLUSIONS AND LIMITATIONS

The success of organizations in the healthcare industry can largely be measured by the satisfaction level from the perspective of the patients. Amidst the current pandemic, the industry is in an ever-expanding need for high quality healthcare with an added emphasis on an environment which focuses on proper usage of masks, sanitizers and other utensils to provide the assurance of cleanliness and hygiene. With the increasing Covid related fatalities, the healthcare sectors deal with extreme repercussions of service failures to a degree which is unprecedented from the organizations' points of view. Therefore, it is pivotal to consistently strive to identify the shortcomings of all aspects of Covid healthcare

and learn from the results of the service quality research findings.

Like any other study, it is not feasible to ensure a perfect set of parameters to accurately measure every single shortcoming of the chosen service sector. Due to the lack of time, funding, manpower and logistics along with the influences of bureaucracy, brokers and unions etc the study cannot be considered as 100% perfect. Moreover, the study was limited to the opinions of a selected group of 131 netizens. More detailed research by means of face-to-face survey and interview with more patients along with other qualitative techniques may portray a clearer picture of the service quality scenario of the vaccination centers in Bangladesh as a whole.

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## APPENDICES

### *MODEL OF QUESTIONNAIRE*

| SERVQUAL | | SERVQUAL Variables | Agreement Scale | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | SD | D | SWD | N | SWA | A | SA |
| | | | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| Reliability (RL) | RL-1 | Staff at vaccine center keep their service promise | | | | | | | |
| | RL-2 | Staff at vaccine center show strong interest to solve inconvenience | | | | | | | |
| | RL-3 | Staff at vaccine center perform service correctly the first time | | | | | | | |
| | RL-4 | Staff at vaccine center insist on error free service | | | | | | | |
| Assurance (AS) | AS-1 | The behavior of the Staff at vaccine center confidence in citizens' minds | | | | | | | |
| | AS-2 | Citizen feels safe in sharing thoughts with the staff at vaccine center | | | | | | | |
| | AS-3 | Staff at vaccine center. are consistently courteous to patients | | | | | | | |
| | AS-4 | Staff at vaccine center have sufficient knowledge to answer queries | | | | | | | |
| Tangibles | TN-1 | Vaccine centers have modern looking equipment | | | | | | | |
| | TN-2 | The physical facilities at vaccine centers are visually appealing | | | | | | | |
| | TN-3 | Staff at vaccine center have neat appearances and outfits in accordance with the characteristics of their work environment | | | | | | | |
| | TN-4 | Vaccine centers have sufficient presence in the media | | | | | | | |
| Empathy (EM) | EM-1 | Staff at vaccine Center give individual attention service receiver | | | | | | | |
| | EM-2 | Staff at vaccine Center have interest of citizen at their priority | | | | | | | |
| | EM-3 | Staff at vaccine center understand citizens' specific requirements | | | | | | | |
| | EM-4 | The operating hours of vaccine center are convenient to all its citizen | | | | | | | |

*Data Analysis Results Imported from SPSS*
**Scale: Reliability (RL)**

*Reliability Statistics*

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .695 | .710 | 4 |

*Case Processing Summary*

| | | N | % |
|---|---|---|---|
| Cases | Valid | 131 | 100.0 |
| | Excluded a | 0 | .0 |
| | Total | 131 | 100.0 |

Listwise deletion based on all variables in the proced

*Item Statistics*

| | Mean | Std. Deviation | N |
|---|---|---|---|
| RL-1 | 2.19 | .921 | 131 |
| RL-2 | 1.79 | 1.013 | 131 |
| RL-3 | 2.02 | .992 | 131 |
| RL-4 | 1.42 | 1.370 | 131 |

**Scale: Assurance (AS)**

*Case Processing Summary*

| | | N | % |
|---|---|---|---|
| Cases | Valid | 131 | 100.0 |
| | Excluded a | 0 | .0 |
| | Total | 131 | 100.0 |

*Reliability Statistics*

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .785 | .785 | 4 |

*Item Statistics*

| | Mean | Std. Deviation | N |
|---|---|---|---|
| AS-1 | 1.53 | 1.297 | 131 |
| AS-2 | 1.15 | 1.359 | 131 |
| AS-3 | 1.54 | 1.165 | 131 |
| AS-4 | 1.09 | 1.243 | 131 |

**Scale: Tangibles (TN)**

*Case Processing Summary*

| | | N | % |
|---|---|---|---|
| Cases | Valid | 131 | 100.0 |
| | Excluded a | 0 | .0 |
| | Total | 131 | 100.0 |

Listwise deletion based on all variables in the procedure.

*Reliability Statistics*

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .743 | .735 | 4 |

*Item Statistics*

| | Mean | Std. Deviation | N |
|---|---|---|---|
| TN-1 | .36 | 1.687 | 131 |
| TN-2 | .52 | 1.734 | 131 |
| TN-3 | 1.48 | 1.355 | 131 |
| TN-4 | .24 | 1.613 | 131 |

**Scale: Tangibles (TN)**

*Case Processing Summary*

| | | N | % |
|---|---|---|---|
| Cases | Valid | 131 | 100.0 |
| | Excluded a | 0 | .0 |
| | Total | 131 | 100.0 |

Listwise deletion based on all variables in the procedure.

*Reliability Statistics*

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .743 | .735 | 4 |

*Item Statistics*

| | Mean | Std. Deviation | N |
|---|---|---|---|
| TN-1 | .36 | 1.687 | 131 |
| TN-2 | .52 | 1.734 | 131 |
| TN-3 | 1.48 | 1.355 | 131 |
| TN-4 | .24 | 1.613 | 131 |

### Scale: Empathy (EM)

*Case Processing Summary*

|       |            | N   | %     |
|-------|------------|-----|-------|
| Cases | Valid      | 131 | 100.0 |
|       | Excluded a | 0   | .0    |
|       | Total      | 131 | 100.0 |

Listwise deletion based on all variables in the procedure.

*Reliability Statistics*

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|----------------------------------------------|------------|
| .728             | .739                                         | 4          |

*Item Statistics*

|      | Mean | Std. Deviation | N   |
|------|------|----------------|-----|
| EM-1 | 1.10 | 1.318          | 131 |
| EM-2 | .94  | 1.288          | 131 |
| EM-3 | .84  | 1.312          | 131 |
| EM-4 | 1.43 | 1.529          | 131 |

### Scale: Responsiveness (RS)

*Reliability Statistics*

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|----------------------------------------------|------------|
| .729             | .744                                         | 4          |

*Case Processing Summary*

|       |           | N   | %     |
|-------|-----------|-----|-------|
| Cases | Valid     | 131 | 100.0 |
|       | Excludeda | 0   | .0    |
|       | Total     | 131 | 100.0 |

Listwise deletion based on all variables in the procedure.

*Item Statistics*

|      | Mean | Std. Deviation | N   |
|------|------|----------------|-----|
| RS-1 | 1.74 | 1.256          | 131 |
| RS-2 | 1.77 | 1.099          | 131 |
| RS-3 | 1.73 | 1.014          | 131 |
| RS-4 | 1.05 | 1.464          | 131 |