International Business Management
MEDWELL PUBLICATIONS

Public and Private Hospitals: Outpatients Perceived Health Service Quality in Wuhan City, China

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Key words: Perceived service quality, healthcare, health service, SERVQUAL, public and private hospitals, practical strategies

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Page No.: 65-71
Volume: 14, Issue 2, 2020
ISSN: 1993-5250
International Business Management

Abstract: There is limited perceived health service quality research literature highlighting studies conducted in the largest city in Central China: Wuhan City. In this study, we investigated the perceived health service quality provided by public and private hospitals in Wuhan City, China. We focused on Tertiary level hospital institutions to provide a glimpse into the current perceived service quality among public and private hospitals in Wuhan City. Across-sectional random study was conducted at both public and private hospitals in Wuhan City, China between January and June 2018. A sample size collected consisted of 428 outpatient respondents. IBM SPSS Statistics 22.0 Software was used to enter and analyzed data. Out of the 428 questionnaires collected, 400 was used for the study. 200 from the public hospitals and the other 200 from the private hospitals. The over all perceived service quality dimension items scale comprising the questionnaire had an excellent reliability. More than half of our respondents were females when compared to the male counterpart. The gynecology department had the largest patient visits while the nephrology department had the lowest in patient visits. Over all perceived service quality was higher in the public hospitals than the private hospitals. In summary, China "Health care system reform" is currently on-going, a greater understanding through further research should be conducted on the perceived service quality between public and private hospitals to better understand the existing health service quality and provide practical strategies to enhance the delivery in health service quality across all hospital types.

INTRODUCTION

In our study, we take a glimpse into the outpatient department's health service quality in the largest city in Central China, Wuhan. It reveals and provides the current situation on perceived service quality in both public and private hospitals in Wuhan city. The concept of service quality is applied in many sectors across different countries each has its own approach on measuring and comparing service quality, however, there are some similarities. Kavitha[1] noted that whether from among the public or private hospitals health service quality varies greatly. Meanwhile, in an earlier report Itumalla *et al*.[2] also, noted that hospitals today are significantly different from those a few decades ago. More specifically, grasping the concept of service quality in the health service sector can become comprehensive. Therefore, the term service quality, particularly in the health service sector should be concise and clear. Itumalla *et al*.[2] recognized that in both public and private hospitals there is a need to offer better service quality to patients.

In 2009, China established and implemented its "health care system reform". Meng *et al*.[13] reported that this transformation is still currently on going. One of the five reform priorities is pertinent to the basis of this research study, it's the necessity to improve service quality in its health sector. This is inclusive of both public and private hospitals throughout China, despite the government and the private health sector roles in health service quality services being controversial as noted by Eggleston *et al*.[4]. Moreover, Eggleston *et al*.[4] reported that limited research and evidence has been conducted and found throughout China on comparing between the service quality in public and private hospitals. Later on, Alijanzadeh *et al*.[5] stated that across different countries, researchers have reported that from other similar studies, respondents who received health services stated that private hospitals was better than public hospitals, however, much is not reported for China due to limited health service quality research studies being conducted.

Musyoka *et al*.[6] reminds us that health service quality is categorized into two parts, one is technical quality and the other is functional quality. Chakravarty[7] explained that technical quality deals primarily with the accuracy in medical diagnoses and procedures. While functional quality deals with the delivery of health care service quality to patients. In laymen terms, in relation to the healthcare service quality[8] gave his contribution by stating that technical quality is about health service quality the patients received while functional quality is about how the patients receive that health service quality.

According to Akhade *et al*.[9] several researchers have reported that the majority of research studies used SERVQUAL scale to measure the service quality of healthcare service providers. Therefore, healthcare service quality can be considered to have two-folds, constructing and primarily designing a service quality questionnaire the healthcare service sector should use necessary and pertinent questions to achieve the respondent responses. As noted by Akhade *et al*.[9] the health care sector is not the same to other service sectors.

Despite it all with China efforts to reform its healthcare system, it is essential to further understand the delivery in health service quality for both public and private hospitals. Purcarea *et al*.[10] highlighted that there is a growth for the consideration of service quality being used a key performance indicator in differentiating services. Therefore, this research study looks at the statistical difference while comparing public and private hospitals perceived service quality in Wuhan City through outpatient's responses.

MATERIALS AND METHODS

Survey instrument: In this study, we developed modified and applied a SERVQUAL questionnaire in alignment to relevant literature reviews to measure and compare perceived service quality between public and private hospitals. We selected the SERVQUAL questionnaire tool because it's widely used and distributed in numerous countries to assess and evaluate health service quality. Our SERVQUAL questionnaire was developed to fit and align perceived service quality outpatient departments for both public and private hospitals in our research study. Service quality dimension items were used to capture the perceived service quality in outpatient departments from both public and private hospitals.

Our out patient questionnaire consisted of two parts. The first part contained the demographic profile of the patients which is considered our dependent variables: sex, age and department. The second part contained the five original dimensions from the SERVQUAL tool: reliability (4 items) responsiveness (4 items) assurance (4 items) empathy (4 items) and tangibles (4 items) totaling 20 (items) questions concerning hospital service quality for out patient departments.

Our SERVQUAL questionnaire was developed in the English language. Then translated into the local Wuhan City Mandarin language and back-translated into the English language. The questionnaire items were scored using a 7-point likert-type scale with a range from 1 (strongly disagree) to 7 (strongly agree).

Pre-test sample: Our questionnaires was pre-tested in December 2017, we randomly distributed and collected a total of 218 questionnaires. Out of the 218 questionnaires

collected we used 200 of them 100 from the out patient departments of a public hospital and the other 100 from the outpatient departments of a private hospital. Our pre-test was done for several reasons, some such as, to improve upon the quality control for the survey questionnaire, survey completion time, wording and validity of the outpatient questionnaires. The questionnaire reliability were analyzed. To confirm reliability and internal consistency of the perceived service quality dimension items, Cronbach alpha was calculated for each. All perceived service quality dimensions were well above Cronbach alpha (0.800). Analysis was processed using IBM SPSS Statistics (22.0).

Main sample: A cross-sectional study was conducted using a random sampling method in Wuhan City between January and June 2018. A total of 8 tertiary and secondary public and private hospitals were sampled. A total of 428 outpatient questionnaires were administered and collected. A sample size of 400 was used in our study. To ensure high quality control of the out patient questionnaires a maximum of 4 randomly selected outpatient patients were allowed to complete the questionnaire at a time. Each respondent was given a concise explanation about the questionnaire after acknowledging that they were willing to participate in the study. After each questionnaire was completed, questionnaires were examined to ensure that each item was completed correctly and valid.

Statistical analysis: The SERVQUAL scale was used to evaluate hospital perceived service quality. Statistical analysis was generated using IBM SPSS Statistics 22.0. Statistical analysis conducted were Cronbach's alpha's frequency and descriptive analysis, normality test and the Wilcoxon rank sum test.

RESULTS AND DISCUSSION

Respondent demographic characteristics: The basic findings of the 400 respondents randomly selected revealed 200 (50%) of them were from the public hospitals while the other 200 (50%) were from the private hospitals. In total, 254 (63.5%) were females while 146 (36.5%) were males. Of the age group categories, 116 (29.0%) patients had the highest in the age group category of 25-34 while the age group category of 65+ had 34 (8.5%) patients which was the lowest. The gynecology department had 57 (14.2%) patients which was the highest among the hospital outpatient service department while the nephrology department had 13 (3.3%) which was the lowest (Table 1).

Perceived service quality dimension reliability: We conducted perceived service quality dimension item analyses to test the reliability. The over all perceived service quality dimension items scale had a high Cronbach's alpha at (0.939) which is excellent. The Cronbach's alpha analyses showed (0.859) for reliability (0.832) for responsiveness, assurance was (0.812) empathy was (0.795) and (0.763) for tangibles (Table 2).

Table 1: Demographic characteristics of outpatient department respondents

Category/classification	Frequency	Percentage
Age		
18-24	70	17.500
25-34	116	29.000
35-44	87	21.800
45-54	53	13.300
55-64	40	10.000
65+	34	8.500
Gender		
Female	254	63.50
Male	146	36.50
Hospital type		
Public	200	50.000
Private	200	50.000
Hospital departments		
Orthopedics	24	6.000
Stomatology	26	6.500
Gynecology	57	14.200
Obstetrics	46	11.500
Respiratory	29	7.200
Endocrinology	46	11.500
Infectious diseases	37	9.300
Cardiology	23	5.800
Nephrology	13	3.300
Pediatrics	40	10.000
Gastroenterology	22	5.500
Emergency	37	9.300

Table 2: Outpatients perceived service quality dimension reliability test

Perceived service quality dimension	Cronbach's alpha
Reliability	0.859
Responsiveness	0.832
Assurance	0.812
Empathy	0.795
Tangibles	0.763

The Kolmogorov-Smirnov and Shapiro-Wilk test were conducted to test for normality of our research study data. The results revealed that each of the five perceived service quality dimensions and total score went against normality with a statistical significant difference ($p<0.001$) (Table 3). Therefore, nonparametric tests were performed.

Table 4 result show that the mean and standard deviation is higher (124.01±16.99) in the public hospitals than it is in the private hospitals (110.89±10.49). The statistical difference between the public and private hospitals is a positive value (13.12) while there is a negative statistical value Z of (-12.641) with a statistical significant difference ($p<0.001$).

As for our perceived service quality dimensions, the results show all the mean and standard deviation for each

Table 3: Normality test for outpatients perceived service quality dimension

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
Perceived service	Statistic	df	Sig.	Statistic	df	Sig.
Reliability	0.248	400	<0.001	0.674	400	<0.001
Responsiveness	0.211	400	<0.001	0.746	400	<0.001
Assurance	0.209	400	<0.001	0.737	400	<0.001
Empathy	0.184	400	<0.001	0.795	400	<0.001
Tangibles	0.186	400	<0.001	0.817	400	<0.001
Total score	0.188	400	<0.001	0.729	400	<0.001

Table 4: Comparison of mean and standard deviation for overall outpatients perceived service quality

Variables	Public hospitals (mean±SD)	Private hospitals (mean±SD)	Difference	Z-values	p-value
Mean for overall outpatients perceived service quality	124.01±16.99	110.89±10.49	13.12	-12.641	<0.001

Table 5: Comparison of mean and standard deviation for perceived service quality dimensions

Perceived service quality dimensions	Public hospitals (mean±SD)	Private hospitals (mean±SD)	Difference	Z-values	p-value
Reliability	25.28±3.98	22.47±2.70	2.81	-11.179	<0.001
Responsiveness	25.13±3.92	22.46±2.65	2.67	-10.129	<0.001
Assurance	25.21±3.59	22.46±2.65	2.85	-11.086	<0.001
Empathy	24.61±3.71	22.09±2.95	2.52	-9.1040	<0.001
Tangibles	23.79±4.05	21.53±3.42	2.26	-7.5480	<0.001

Table 6: Comparison of mean and standard deviation for perceived service quality dimensions

Outpatients perceived service quality dimension	N	Minimum	Maximum	Mean	SD
Reliability					
Medical services provide at designated time	400	1	7	6.01	1.09
Doctors explain the medical treatment performed	400	1	7	6.02	1.03
Doctors initially perform correct medical services	400	1	7	5.94	1.16
Doctors do things within promised time periods	400	1	7	5.90	1.11
Responsiveness					
Doctors make time to deal with patient's requests	400	1	7	5.95	1.14
Doctors show a sincere interest in solving medical issues	400	1	7	5.98	1.05
Doctors give prompt service	400	1	7	5.94	1.11
Doctors are always willing to patients	400	1	7	5.91	1.12
Assurance					
Doctors are consistently courteous towards patient	400	1	7	5.95	1.10
Doctors instill confidence in patients	400	1	7	5.95	1.05
Doctors conduct themselves professionally	400	2	7	5.94	1.13
Doctors have the knowledge to answer questions	400	2	7	5.95	1.07
Empathy					
Doctors listen carefully to patients	400	1	7	6.03	1.10
Doctors give me individual attention	400	2	7	5.64	1.14
Doctors have patient's best interests at heart	400	2	7	5.89	1.11
Doctors understand my specific needs	400	2	7	5.78	1.19
Tangibles					
Patients can distinguish between doctors and nurses	400	1	7	5.79	1.40
Outpatient department is always clean	400	1	7	5.74	1.22
Outpatient bathrooms are always clean	400	1	7	5.34	1.32
Easy to find one's way around outpatient department	400	1	7	5.80	1.16

perceived service quality dimensions between the public and private hospitals. The five perceived service quality dimension means were all higher in the public hospitals than the private hospitals (Table 5). The highest mean is the reliability perceived service quality dimension (25.28±3.98) for the public hospitals while the lowest mean is the tangibles perceived service quality dimension for the private hospitals (21.53±3.42). The statistical difference between the public and private hospitals perceived service quality dimensions were all positive values. While the statistical value Z between the public and private hospitals for each perceived service quality dimensions were all negative values each of the perceived service quality dimensions between public and private hospitals has a statistical significant difference ($p<0.001$).

In general, (Table 6) over all outpatients perceived service quality dimension questionnaire mean scores were highly favorable out of the maximum mean score of 7. However, there are a few minute differences. On the reliability scale, the highest mean score was (6.02) whereas the lowest scale (5.98) was the highest mean

score while (5.91) was its lowest mean score. The level of mean score was (5.90). On the responsiveness assurance mean scores were close between its highest and lowest mean score (5.95) and (5.94), respectively. In regards to empathy the highest mean score was (6.03) while its lowest was (5.64). Tangibility was (5.80) with its highest mean score while (5.34) was its lowest mean score.

As the efforts in "China health care reform" is still in the transformational stages the delivery in health service quality to patients should be a core component. Most times the focus is on addressing better health services but mostly through advanced health care technologies, better health insurance and extra facilities. However, patient's need all of that but health service quality to patients is key in addition to other factors. Purcarea *et al*.[10] mentioned that the comprehension in understanding service quality from the view point of patients is of utmost importance and medical service providers need to have a better understanding on what and how perceived service quality is viewed through the eyes of patient's. The importance in hospital service quality to patients should be top priority. Both public and private hospitals in Wuhan City, China should make every effort to meet the basic necessities to provide premium health service quality.

Our research investigated the perceived service quality between public and private hospitals in Wuhan City, China. We wanted to take a glimpse into the existing service quality. As such, our findings indicated that there are differences in perceived service quality between public and private hospitals. Our results revealed that our modified SERVQUAL tool which was used to assess and evaluate perceived service quality between the public and private hospitals was extremely reliable.

As for the demographic characteristics of the respondents in our research study, patients aged 25-34 had the highest in outpatient hospital service visits. This could suggest that persons 25-34 in Wuhan City, China are more prone to health issues and there by seek more medical health services, whereas persons 65 years and over could be less susceptible to health ailments or perhaps choose not to seek modern medical health services which may be a bit surprising to some researchers. According to a Anonymous[11] report it stated that when people become older, they are more susceptible to diseases. However, it should be noted that every nation is built on its unique and vast cultural health practices. Therefore, perhaps more aged persons over 65 may tend not to seek modern medical health services in Wuhan City, China but rather may use 'Alternative' traditional medical services and treatments. As expected, our research findings showed evidence that more females sought medical health services than men. More than half of our study respondents were females. Wang *et al*.[12] research study concluded that men are less likely to seek medical health service for health issues. Perhaps, females take their health care more serious than men. Furthermore, our study descriptive findings can imply that more than ever in today's society, men worldwide should be empowered about the importance of seeking health medical services. It would have been advantageous to our study, if the percentage on the mortality rate between females and males due to health conditions was known. The Gynecology department proved to have the highest in patients seeking medical service treatment. This may prove to be an indicator that a high percentage of women in the city is faced with gynecological challenges whereas the Nephrology Department has the lowest in patients seeking medical treatment. Many factors can contribute to the low percentage, however, reasons being are unknown. Perhaps, a much more in depth research study on those factors should be explored in future research studies.

The main objective of our research study was to investigate the comparison in perceived health service quality between the public and private hospitals in Wuhan City, China. Our results showed that the over all comparison in perceived service quality between public and private hospital has a significant difference. Results showed that the perceived service quality in the five perceived service quality dimensions areas in the public hospitals were all higher than in the private hospitals each having a significant difference.

Evidence may suggest that public hospitals deliver a higher perceived service quality than private hospitals in Wuhan City, China. Our findings were consistent with Eggleston *et al*.[4] research study, they discussed that public hospitals in China remains to have the highest level in health care service quality over private hospitals. When compared between the two types of hospitals, public hospitals are relatively delivering a higher perceived service quality to its patients than private hospitals in Wuhan City. The findings from our research study do not suggest that private hospitals in Wuhan City delivers poor perceived service quality. However, when the private hospitals are compared to the public hospitals, their perceived service quality is lower. Similar to Yousapronpaiboon and Johnson[13] research study, our five dimension of service quality included reliability, responsiveness, assurance, empathy and tangibles.

Our modified SERVQUAL which was originally model by Parasuramann *et al*.[14] has been considered and used in most research studies to evaluate service quality. Our study was consistent with Dikmen *et al*.[15] and others in that the five service quality dimensions (reliability, responsiveness, assurance, empathy, tangibles) in our study was also were used to evaluate and determine the perceived health service quality in both public and private hospitals. Results had statistical significant differences

across all five service quality dimensions between public and private hospitals. These findings revealed that comparatively public hospital provides more health service quality than private hospitals in Wuhan City. Fatima *et al*.[16] also, noted many comparative research studies that suggested differences in medical health services delivered by public and private hospitals.

Our analysis on the reliability service quality dimension showed that private hospitals in Wuhan City is less reliable when compared to the public hospitals. Our results suggest that medical doctors in public hospital provides more medical services on time, they explain performed medical treatments and initially perform correct medical service treatment the first time than the private hospitals. Responsiveness service quality dimension revealed that public hospitals offer a higher responsive service than private hospitals. This may simply imply that doctors in the public hospitals make more time to deal with their patient requests, they show a more sincere interest in solving their patient's medical problems while always willing and giving prompt medical services than doctors in the private hospitals. Furthermore, results suggested that doctors gave more assurance on being more knowledgeable to answer patient questions while being consistently courteous and instilling confidence with a professional conduct in the public hospitals over the private hospitals. Patients in the public hospital ranked doctors as being more empathetic than patients in the private hospitals. Doctor displayed higher empathy in the public hospitals through listening carefully to patients, giving individual attention having the patient's best interest at heart while understanding their specific medical needs. As for the fifth service quality dimension, tangibility service quality dimension comprised of items such as, patients can distinguish between doctors and nurses, outpatient department is always clean, outpatient bathrooms are always clean and it's easy to find your way around the outpatient department. Patients in the outpatient department of the public hospitals scored the tangible service quality higher than the patients in the outpatient department of the private hospitals.

Similar to Bwembya *et al*.[17] the service quality dimensions in our research study were all equally important. Our results contributes to scientific literature on providing a comparison between service quality in public and private hospitals in Wuhan City. Simply our research study results suggests that as China continue its efforts in its "health care system reform", greater attention into research should be conducted on various levels in examining, assessing, evaluating and determining the health service quality in its public and private hospitals. Despite our research study contributions, it has its limitations for which future researcher can build their research study on. Among our research study limitations, it lacked examining the perceived health service quality between rural public and private hospitals also, our study did not investigate factors that may have contributed to the difference in perceived service quality between public and private hospitals in Wuhan City, China.

CONCLUSION

In summary, our over all findings showed that perceived service quality was higher in public hospitals than private hospitals. However, this does not suggests the private hospitals in Wuhan City delivers a low service quality.

It simply suggests that when private hospitals perceived service quality is compared to public hospitals perceived service quality its perceived service quality is lower. However, it is suggested that as China "Health care system reform" is currently on-going a greater understanding through research should be conducted on the perceived service quality between public and private hospitals to better understand the existing service quality and provide practical strategies to transform and enhance the delivery in service quality across all hospital types. Our research study data findings seek to lay and build the foundation to advance further research in the field in the health service sector in Wuhan city, China.

ACKNOWLEDGEMENTS

We thank the School of Medicine and Health Management, Tongji Medical College, Huazhong University of Science and Technology for organizing and arranging the data collection at all the hospitals. Moreover, we would like to thank the public and private hospitals administrative managers and the patients in Wuhan City, China who accepted and agreed to participate in the research study. Finally we thank Kaisha Christie George for her expertise in the local language translation and her resourceful comments and suggestions.

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