

Manulik Stanislaw, Karniej Piotr, Rosińczuk Joanna . The influence of socio-demographic characteristics on respondents' perceptions of healthcare service quality. *Journal of Education, Health and Sport*. 2018;8(12):708-724. eISSN 2391-8306. DOI <http://dx.doi.org/10.5281/zenodo.2529133>
<http://ojs.ukw.edu.pl/index.php/johs/article/view/6429>

The journal has had 7 points in Ministry of Science and Higher Education parametric evaluation. Part B item 1223 (26/01/2017).
1223 Journal of Education, Health and Sport eISSN 2391-8306 7

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The authors declare that there is no conflict of interests regarding the publication of this paper.

Received: 20.11.2018. Revised: 20.12.2018. Accepted: 31.12.2018.

The influence of socio-demographic characteristics on respondents' perceptions of healthcare service quality

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Abstract

Introduction

Service quality is the customer's subjective assessment that plays an increasingly important role as an element of competitive advantage in the health sector.

Aim

The main purpose was to determine whether the selected socio-demographic characteristics had a considerable impact on patients' quality priorities and their perceptions of service quality; and whether patients of public and private healthcare centres differed regarding their quality priorities and perceptions of the service they received.

Material and methods

The study included 412 patients who were referred to a public (n=211) or a private (n=201) centre. The SERVQUAL questionnaire was used as the primary assessment tool. Respondents were to answer 22 questions grouped into five different dimensions that assessed their perceptions of service quality.

Results

Respondents' expectations exceeded perceptions of service quality offered by public and private healthcare centres. Private sector respondents had the highest quality expectations regarding hardware and infrastructure, whereas public sector respondents were primarily concerned with relationships with personnel. The impact of socio-demographic characteristics on respondents' expectations and perceptions of healthcare service quality was unclear.

Conclusion

Socio-demographic characteristics do not have a clear impact on patients' expectations and perceptions of healthcare service quality and as such, should not be used in the process of quality management.

Keywords: public health, healthcare service quality, quality management, socio-demographic characteristics

Introduction

The issue of establishing quality standards for services, and associated studies focused on this process, have led to the creation of various models illustrating the dynamic relationships between quality factors. These models formed the foundations for the structure of a service quality assessment method, assessing both the potential and the outcome of the process. These methods are used to identify high-quality factors and to measure customer satisfaction. They are also crucial to the process of quality improvement, thus allowing the identification of “weak points”. Standard management tools commonly used in quality management include flowcharts, brainstorming, Pareto Chart, Eisenhower Box, analysis of Punishment and Reward, Critical Incident Techniques (CIT), Importance - Performance Analysis (IPA), and Quantitative Methods [1–4]. Quality management is an approach in which quality takes precedence over other issues and is treated as a priority [5]. For this reason, synthetic methods such as gap models (including SERVQUAL model) are important in creating and assuring quality in services.

The *gap model* was developed by Parasurman et al. [6] by means of empirical studies using statistical formulas. This approach made it possible to distinguish five gaps and the factors that affected them. This model identifies gaps in service delivery and its perception by the consumer, which results in the customer assessing the level of service as low-quality. A detailed description is given below:

1) The first gap addresses differences between customer expectation and management perception of customer expectations. This gap is influenced by the following factors [7]: a. Inadequate marketing research orientation, b. Lack of upward communication, c. Insufficient relationship focus.

2) The second gap addresses differences between management perception and service quality specification. The factors affecting this gap are [7]: a. Management commitment to service quality, b. The existence of goal setting, c. Standardisation of pro-quality actions, d. Perception of customers' expectations.

3) The third gap addresses the difference between service quality specification and service delivery. Factors affecting this gap include [2]: a. Organization commitment to quality, b. Poor human resource policies, c. Supply-demand imbalance, d. Incapability or unwillingness to meet set service standards, e. Discrepancies in customer expectations and organization expectations, f. Customers' failure to fulfil their role in service delivery.

4) The fourth gap addresses the differences between service delivery and external communication. Factors influencing this gap include [2]: a. Inadequate horizontal communication within the organization, b. Unreasonable promises in marketing activities.

5) The fifth gap arises out of the previous four gaps, and it addresses the differences between expected service and experienced service [8].

The increasingly common gap model provides for practical identification of shortcomings in service quality and indicates corrective actions to improve them. The derivative of the gap model is the SERVQUAL model. In 1985, Parasurman et al. [6] attempted to determine the essential criteria underlying expectations of service recipients and to evaluate the degree of expectation fulfilment through the delivered service. The researchers

conducted twelve focus groups for the project, three for each from the following areas: retail banking, credit cards, futures exchange, repair and maintenance services [9]. The results of this study formed the basis for the SERVQUAL model used for quality measures. This model measures gaps between customers' expectations of service quality and perceptions of the service they receive.

The quality of service, perceived subjectively, plays an increasingly important role as an element of competitive advantage in the health sector. Findings of numerous studies are consistent. While the medical staff and managers of health care centres focus mainly on the elements of the so-called technical quality (service availability, accessibility, and quality of medical equipment, objective outcomes, survival), their customers pay at least as much attention to the functional quality (environmental factors, interpersonal relations, security). Becoming aware of these discrepancies in quality priorities has resulted in a more frequent use of perceived quality as a measure of facility efficiency and as an essential factor in decision-making. One of the most commonly used complex methods of assessing expected and perceived service quality is SERVQUAL model (gap model). This model is becoming an increasingly popular tool used to evaluate quality offered by health facilities.

Introducing market mechanisms into the health sector meant that financial results have become one of the functional priorities for public institutions that aim at winning a contract with the National Health Fund, which is in turn conditioned by the demand for service. At the same time, in the continually expanding private healthcare sector, customers' satisfaction and loyalty are key competitive advantages.

In the light of these considerations, it was decided to measure the level of customers' expectations of service quality and perceptions of the service they received in public and private health institutions, using SERVQUAL model.

Objective

The objective of the study was to determine: (1) whether the selected characteristics (gender, age, level of education, place of residence, material status, annual visit frequency) have a significant impact on patients' quality priorities and perceptions of the service they receive, and (2) whether patients of public and private healthcare centres differ regarding their quality priorities and perceptions of the service quality they receive.

It was assumed that patients receiving care in health maintenance organizations (HMOs) (facility "A" in the presentation of research results) and in private centres (facility "B") differ regarding their quality priorities and perceptions of service quality they receive. Patients receiving care in private centres display higher service quality expectations across all five dimensions of the SERVQUAL model. They also display higher perceptions of the service quality delivered.

Material and methods

Respondents

The research conducted in the years 2013–2015 included a total of 412 patients referred to one of the allergy clinics. Participation in the study was voluntary and the only inclusion criterion was agreeing to participate. Patients who were unable to complete a questionnaire independently due to their physical or cognitive dysfunctions were excluded from the study.

During the visit, respondents, after giving their informed consent and being instructed by the hospital staff, filled out the SERVQUAL questionnaire and placed it into a specially designed box. Those who in the analysis period used facility services more than once filled out the questionnaire only during the first visit. The study protocol has been approved by Bioethics Commission at the Wroclaw Medical University (no. KB–751/2011).

The trials included a total of 211 patients receiving care in HMOs (facility A) and 201 patients receiving care in private centres (facility B). Table 1 presents the characteristics of respondents. The groups shared socio-demographic characteristics except for gender distribution. Women outnumbered men in groups of patients receiving care in private centres (facility B).

Table 1. Socio-demographic characteristics of facility-A participants and facility-B participants.

Parameter	Facility A (n=211)	Facility B (n=201)	p
Gender			
women	108 (51%)	124 (62%)	0.037
men	103 (49%)	77 (38%)	
Age (years)			
18-24	45 (21%)	37 (18%)	0.188
25-29	37 (18%)	45 (22%)	
30-34	41 (19%)	41 (20%)	
35-39	36 (17%)	30 (15%)	
40-44	12 (6%)	18 (9%)	
45-49	22 (10%)	9 (4%)	
50-54	18 (9%)	21 (10%)	
Education			
primary	2 (1%)	3 (1%)	0.316
lower secondary	4 (2%)	5 (2%)	
vocational	53 (25%)	38 (19%)	
secondary/post-secondary	109 (52%)	99 (49%)	
higher	43 (20%)	56 (28%)	
Place of residence			
rural areas	27 (13%)	27 (13%)	0.996
city of less than 25.000	27 (13%)	25 (12%)	
city of 25.000 – 100.000	42 (20%)	39 (19%)	
city of more than 100.000	115 (55%)	110 (55%)	
Net income per capita (PLN)			
<400	51 (24%)	47 (23%)	0.994
401-800	107 (51%)	105 (52%)	
801-1200	34 (16%)	33 (16%)	
1201-1600	18 (9%)	15 (7%)	
1601-2000	1 (0.5%)	1 (0.5%)	
Annual visit frequency*	6 (1-12)	5 (1-16)	0.580

*median (range)

Quality Measurements

The study was conducted in the context of the SERVQUAL five dimensions subdivided into 22 perception-oriented questions (items) measured using a 5-point Likert-type scale. The level of expectations and perceptions of service quality was measured by calculating scores assigned to all five dimensions: 1. Tangibility (appearance of physical facilities, equipment, personnel), 2. Reliability (ability to perform the promised service accurately and dependably), 3. Responsiveness (willingness to provide prompt service and ability to help customers), 4. Assurance (knowledge and courtesy of employees, their ability to establish confidence and to convey trust), 5. Empathy (caring, individualised attention the firm provides its customers).

In the first part of the study, respondents declared their expectations of service quality regarding these five items, in the second part- the level of perceived performance [9]. Each response was scored on a 1 to 5 scale, where 1 equated to “completely disagree” and 5 - “totally agree”. The following formula calculates service expectation fulfilment in all five dimensions (overall service quality SQ):

$$SQ = \text{comparison of expectation (E) with performance (P), } SQ = P - E.$$

Negative scores in SQ index indicate recipient dissatisfaction, and positive scores – recipient excessive satisfaction [9–11].

Statistical Analysis

The Shapiro-Wilk (S-W) test was used to test the assumption that variables were normally distributed. Since none of the variables were normally distributed, their statistical characteristics were summarized using a median, lower and upper quartile values and extreme values (ranges). The Mann-Whitney U-test was used to compare differences between groups. Statistical characteristics of discrete and qualitative variables were presented as number and percentage distributions; Pearson chi-square test or Fisher's exact test were used for their comparisons. Spearman rank-order correlation coefficient (r) was used to measure the strength and direction of a relationship between the two variables. All calculations were performed using Statistica 10 and the level of statistical significance was set at 0.05 ($p \leq 0.05$).

Results

The impact of respondents' gender on perceived service quality

Exhibit 1 presents statistical characteristics of gaps between respondents' expectations and perceptions, expressed in the form of SERVQUAL dimension scores. In the case of facility-A respondents, the negative gaps between expectations and perceptions were significantly wider than in the case of facility-B respondents across all dimensions of service quality except for “Assurance”. The gender of the respondents did not have a significant effect on their expectations, reflected in the SERVQUAL scores assigned to statements comprising a given dimension (Table 2).

The gender of the respondents had a significant effect on their perceptions, reflected in the SERVQUAL scores assigned to statements comprising the “Tangibility” dimension, “Reliability” dimension, “Responsiveness” and “Empathy” dimensions (Table 2). Men assigned lower scores to the following statements: “Facility looks neat, and the external markings are clearly legible,” “Information leaflets are attractive and up-to-date,” “Facility operates as declared (day, time),” “In force majeure events, medical personnel should give prior notice to patients of inability to provide healthcare and set the soonest, mutually accepted, date of the next appointment,” “Medical personnel ought to be ready for immediate response if customers are dissatisfied with the care they are given” and “Medical benefits are granted at the time convenient and acceptable to both parties (institution and patient)”. The

above gaps translated into significantly higher mean scores which women assigned to “Tangibility” and “Empathy” dimensions.

Table 2. The impact of gender on: (1) the level of respondents' expectations of service quality; and (2) the level of respondents' perceptions of service quality (SERVQUAL dimension scores).

Dimension	Women (n=232)			Men (n=180)			p
	median	quartile	range	median	quartile	range	
(1) the level of respondents' expectations							
Tangibility	4.2	3.8-4.8	2-5	4.2	3.9-4.8	2-5	0.775
Reliability	4.4	4-4.8	1.8-5	4.3	4-5	3-5	0.972
Responsiveness	4.5	4-4.8	1.5-5	4.5	4-5	1.8-5	0.279
Assurance	4.3	4-5	2-5	4.3	4-5	2.7-5	0.689
Empathy	4.6	4-5	2-5	4.6	4-5	2.8-5	0.706
OVERALL	4.3	4-4.7	2-5	4.2	4-4.7	3-5	0.948
(2) the level of respondents' perceptions							
Tangibility	3	2-3.8	1-5	2.5	1.8-3.6	1-5	0.038
Reliability	3	2.2-4	1-5	2.8	2.2-3.9	1-5	0.061
Responsiveness	3.8	3.3-4	1-5	3.5	3.3-4	1-5	0.054
Assurance	4	3.3-4.3	1-5	3.7	3.7-4.3	1-5	0.595
Empathy	3.2	3-4	1-5	3.2	2.8-3.8	1-5	0.040
OVERALL	3.4	2.9-3.9	1-5	3.2	2.8-3.7	1-5	0.056

The impact of respondents' age on perceived service quality

With increasing age, respondents tended to lower their expectation scores assigned to one statement in “Reliability” dimension– “Planning process–Patients can register: in person, by phone, through a third party” (Table 3). There were no significant correlations, however, between respondents' age and scores attributed to particular dimensions of the questionnaire.

With increasing age, respondents tended to significantly lower their perception scores assigned to one statement in “Tangibility” dimension– “The facility is equipped with modern medical equipment”. Whereas respondents' scores on the following statements improved: “Information leaflets are attractive and up-to-date” (“Tangibility” dimension), “Facility operates as declared (day, time)” (“Reliability” dimension), “Medical personnel ought to be ready for immediate response if customers are dissatisfied with the care they are given” (“Responsiveness” dimension). “Responsiveness” was the only SERVQUAL dimension whose scores were influenced by the age of the respondents. With age, respondents tended to assign high scores to this dimension (Table 3).

Table 3. The impact of age on: (1) the level of respondents' expectations of service quality; and (2) the level of respondents' perceptions of service quality (SERVQUAL dimension scores).

Dimension	n	R	p
(1) the level of respondents' expectations of service quality			
Tangibility	412	-0.029	0.561
Reliability	412	-0.092	0.061
Responsiveness	412	-0.059	0.235
Assurance	412	-0.049	0.321
Empathy	412	-0.024	0.632
OVERALL	412	-0.078	0.115
(2) the level of respondents' perceptions of service quality			
Tangibility	412	-0.009	0.856
Reliability	412	0.063	0.204
Responsiveness	412	0.099	0.045
Assurance	412	0.014	0.771
Empathy	412	0.057	0.246
OVERALL	412	0.057	0.247

The impact of education level on perceived service quality

Respondents with a higher level of education displayed higher expectations of service quality. It reflected in scores on the following statements: “Information leaflets are attractive and up-to-date” (“Tangibility” dimension), “Personnel should report to work appropriately dressed and wear identification badges” (“Tangibility” dimension), and “Facility acknowledges patients' discretion and intimacy and recognizes personal dignity during treatment” (“Responsiveness” dimension). The level of education did not have a significant impact however, on scores on particular dimensions of SERVQUAL questionnaire (Table 4).

Respondents' level of education did not have a significant impact on their perception scores assigned to particular statements in SERVQUAL questionnaire and whole dimensions (Table 4).

Table 4. The impact of education on: (1) the level of respondents' expectations of service quality; and (2) the level of respondents' perceptions of service quality (SERVQUAL dimension scores).

Dimension	n	R	p
(1) the level of respondents' expectations of service quality			
Tangibility	412	0.073	0.139
Reliability	412	0.055	0.266
Responsiveness	412	0.084	0.089
Assurance	412	0.044	0.370
Empathy	412	0.046	0.354
OVERALL	412	0.062	0.212
(2) the level of respondents' perceptions of service quality			
Tangibility	412	0.015	0.766
Reliability	412	0.002	0.961
Responsiveness	412	0.013	0.800
Assurance	412	0.010	0.839
Empathy	412	-0.013	0.800
OVERALL	412	0.008	0.868

The impact of respondents' material status on perceived service quality

Respondents with the better financial situation assigned: (1) higher expectation scores to the statement “The facility is equipped with modern medical equipment” (“Tangibility” dimension), and (2) lower perception scores to the statements: "Medical personnel ought to be competent and reliable" (“Assurance” dimension) and “Personnel should treat patients individually” (“Empathy” dimension). Respondents' financial situation did not have a significant impact, however, on scores assigned to particular dimensions of SERVQUAL questionnaire (Table 5).

Improvement in respondents' material status translated into improvements in service quality perceptions in the following statements: “Facility operates as declared (day, time)” (“Reliability”), “In force majeure events, personnel ought to give prior notice to patients of inability to provide healthcare and set the soonest, mutually accepted, date of the next appointment” (“Reliability”), “Planning process–Patients can register: in person, by phone, through a third party” (“Reliability”), “Personnel should always be friendly and kind to patients and their families” (“Responsiveness”) and “Medical personnel ought to be ready for immediate response if customers are dissatisfied with the care they are given” (“Responsiveness”). Improvements in respondents' material status influenced higher scores on "Reliability" and "Responsiveness" dimensions and the overall SERVQUAL scale (Table 5).

Table 5. The impact of material status on: (1) the level of respondents' expectations of service quality; and (2) the level of respondents' perceptions of service quality (SERVQUAL dimension scores).

Dimension	n	R	p
(1) the level of respondents' expectations of service quality			
Tangibility	412	0.079	0.111
Reliability	412	0.034	0.494
Responsiveness	412	-0.040	0.421
Assurance	412	-0.069	0.162
Empathy	412	-0.050	0.316
OVERALL	412	-0.004	0.930
(2) the level of respondents' perceptions of service quality			
Tangibility	412	0.040	0.417
Reliability	412	0.132	0.007
Responsiveness	412	0.136	0.006
Assurance	412	0.064	0.198
Empathy	412	0.062	0.213
OVERALL	412	0.124	0.012

The impact of the size of place of residence on perceived service quality

Respondents residing in larger towns assigned lower expectation scores to the statement “The facility is equipped with modern medical equipment” (“Tangibility” dimension). The size of place of residence did not have a significant impact, however, on scores on particular dimensions of SERVQUAL questionnaire (Table 6).

Respondents residing in bigger towns assigned lower perception scores to the following statements in “Tangibility” dimension: “Facility is equipped with modern medical equipment,” “Facility looks neat and the external markings are clearly legible,” “Individual rooms are well-kept and clean,” “Information leaflets are attractive and up-to-date” and the following statement in “Responsiveness” dimension: “Medical personnel ought to be ready for immediate response if customers are dissatisfied with the care they are given”. The larger the place of residence, the lower the scores in the overall “Tangibility” dimension scale (Table 6).

Table 6. The impact of the size of place of residence on: (1) the level of respondents' expectations of service quality; and (2) the level of respondents' perceptions of service quality (SERVQUAL dimension scores).

Dimension	n	R	p
(1) the level of respondents' expectations of service quality			
Tangibility	412	-0.037	0.459
Reliability	412	0.023	0.645
Responsiveness	412	0.060	0.224
Assurance	412	0.021	0.668
Empathy	412	0.083	0.094
OVERALL	412	0.025	0.619
(2) the level of respondents' perceptions of service quality			
Tangibility	412	-0.128	0.009
Reliability	412	-0.053	0.285
Responsiveness	412	-0.030	0.549
Assurance	412	0.001	0.977
Empathy	412	-0.026	0.603
OVERALL	412	-0.073	0.141

The impact of annual visit frequency on perceived service quality

Increased annual visit frequency translated into higher service quality expectations. It resulted in higher scores assigned to the statements: “Technical conditions of medical devices make diagnostic tests available on the date of notification” (“Reliability”), “Personnel ought to be competent and reliable” (“Assurance”), “Personnel should treat patients individually” (“Empathy”). Visit frequency did not, however, have a significant impact on respondents' expectation scores and overall SERVQUAL score (scores for each dimension) (Table 7).

Increased annual visit frequency translated into improvements in respondents' perceptions of service quality. It resulted in: (1) significantly higher SERVQUAL scores on the statement “The facility is equipped with modern medical equipment” (“Tangibility” dimension), and (2) significantly lower scores on statements in “Empathy” dimension: “Personnel should treat patients individually” and “Medical services are provided at the time convenient and acceptable to both parties (healthcare centre and patient)”. Visit frequency did not however, have a significant impact on respondents' overall perception score (Table 7).

Table 7. The impact of annual visit frequency on: (1) the level of respondents' expectations of service quality; and (2) the level of respondents' perceptions of service quality (SERVQUAL dimension scores).

Dimension	n	R	p
(1) the level of respondents' expectations of service quality			
Tangibility	412	-0.043	0.384
Reliability	412	0.046	0.347
Responsiveness	412	0.036	0.461
Assurance	412	0.081	0.100
Empathy	412	0.063	0.198
OVERALL	412	0.059	0.233
(2) the level of respondents' perceptions of service quality			
Tangibility	412	0.040	0.421
Reliability	412	-0.002	0.973
Responsiveness	412	-0.015	0.764
Assurance	412	-0.010	0.834
Empathy	412	-0.055	0.266
OVERALL	412	0.009	0.857

Figure 1 shows a summary of characteristics of gaps between respondents' expectations and perceptions of service quality among public and private facilities.

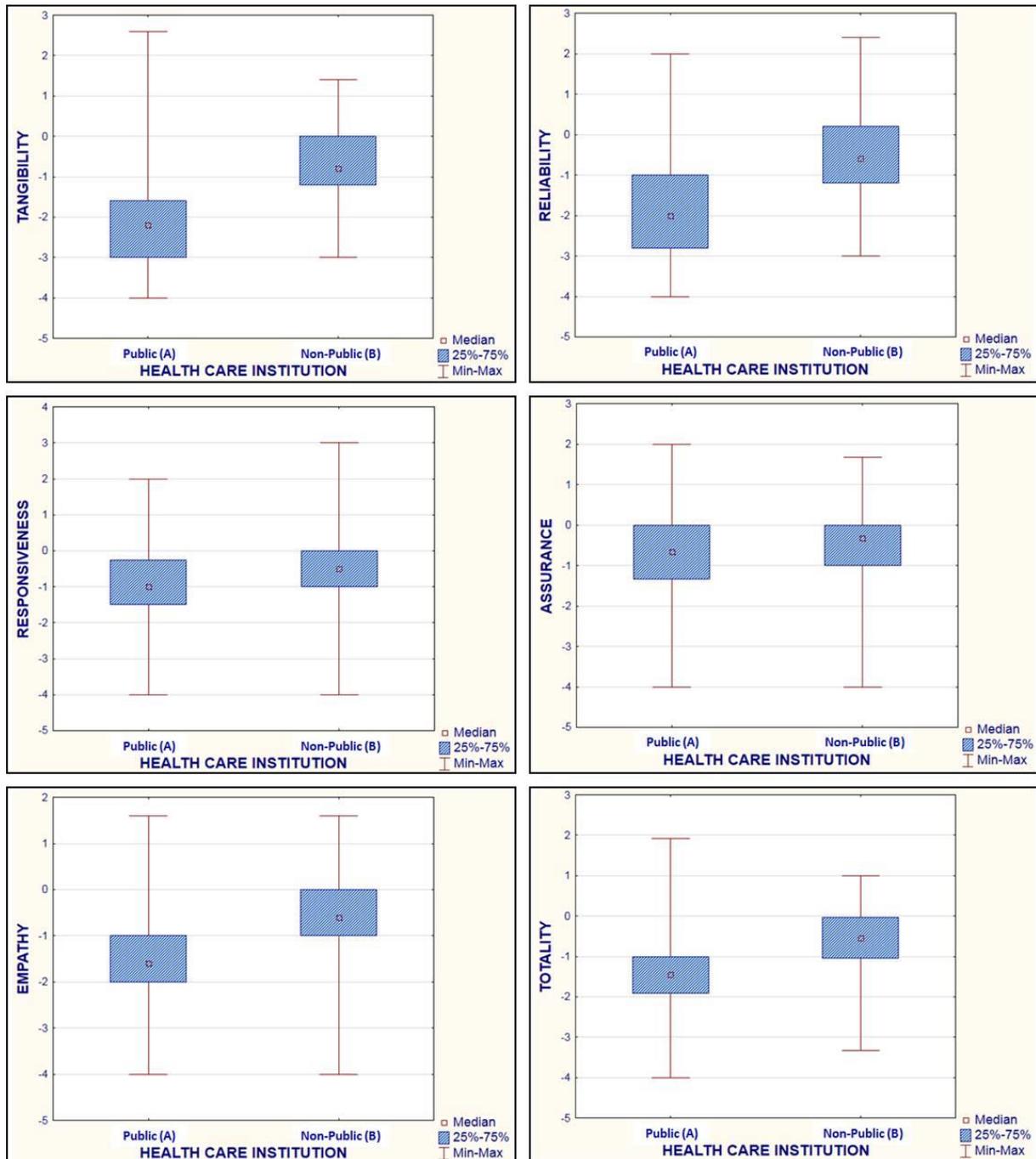


Figure 1. Statistical characteristics of gaps between respondents' (facility-A and facility-B) expectations and perceptions of service quality, expressed in the form of SERVQUAL dimension scores.

Discussion

The objective of the study was to: (1) examine service quality offered by HMOs (facility A) and private healthcare clinics (facility B), which was assessed subjectively by patients, and to (2) establish the influence of socio-demographic characteristics of the respondents on their perception of service quality. The analysis included both the level of expected service in particular dimensions of the SERVQUAL questionnaire and the level of experienced service in those dimensions.

Not only did the type of clinics influence respondents' expectations and service quality perceptions in particular dimensions, but also some other factors including demographic and

clinical characteristics of respondents. The study showed that the gender of the respondents was not such a major factor. The only statistically significant differences between subgroups of men and women related to perception scores assigned to “Tangibility” and “Empathy” dimensions – scores were higher in the case of women. It may appear that these relationships should be interpreted primarily in the context of perception- the process that is greater in the case of women. Women could recognise and appreciate some of the details in facilities' equipment and personnel behaviour that remained elusive to men, for example the aesthetic appearance, readable external markings, flexibility of operating hours. Male respondents did not display high expectation results in relation to these factors. This was also supported by the results of earlier studies on gender as a crucial factor in assessing healthcare service quality: the studies did not show any specific trends relevant for the assessment. Two studies in Taiwan showed that women had higher expectations regarding healthcare service quality. The studies were conducted on: (1) patients of dialysis centre [12] and patients qualified for laser vision correction [13], (2) patients with asthma who received treatment in Turkish academic centre [14] and patients of private hospitals in Iran [15]. Even studies that evaluated the role of gender in healthcare service quality perception, did not point to its crucial influence on respondents' expectations – also in the case of patients referred to medical facilities for similar reasons, e.g. for dialysis for chronic kidney disease [16]. Further, it appears ineffectual to consider the relationship between gender and service quality priorities in univariate analysis. The study conducted among 200 patients of University Health Centre Dental Clinic in Athens (Greece) showed that only women from lower social classes had higher expectations for healthcare service quality [17]. While interpreting the results of studies conducted in different countries, the cultural role of gender or the economic factors should be taken into account.

The study also evaluated the role of respondents' age as the next crucial factor in expectations and perceptions of medical service quality. The study revealed that with age, respondents assigned higher perception scores to “Responsiveness” dimension and the gap between expectations and perceptions became significantly smaller in “Reliability” and “Responsiveness” dimensions. The role of respondents' age as the factor influencing scores for service quality in those dimensions appears to stem from the fact that older people are not accustomed to free-market health care mechanisms and still perceive offered service quality through the prism of past times when personnel-patients relationships were paternalistic. Based on the available research and literature references, it should be noted that the age of the respondents was not as yet routinely analysed as a determinant of subjectively perceived service quality. In the repeatedly cited study of over 1000 patients with chronic kidney disease admitted to the dialysis facilities in Taiwan, the gaps between healthcare service quality expectations and perceptions were much greater in the case of young people. If considering significant regional, cultural and clinical discrepancies in the population of the cited study and participants of this study, the direct comparison of studies' results does not appear to be methodologically justified. Nevertheless, it seems that younger patients tend to have higher expectations of medical service quality. It may therefore be reasonably assumed probable that this difference is less linked with age than with generational differences in quality priorities.

This study did not show that education level had an impact on service quality expectations and perceptions. Sources in literature do not clearly relate patients' education level with patients' healthcare service quality expectations. The studies showed that respondents with higher education have more realistic (lower) expectations of service quality, which translates into a smaller gap between expectations and perceptions. Such a correlation has been confirmed in the case of patients with chronic kidney disease referred to dialysis centres in Taiwan [12] and Iran [16] and patients of Iranian general hospitals [15]. However, other studies showed that patients with better education expect higher healthcare service

quality, which translates into a bigger gap between expectations and perceptions. These were the conclusions of authors of the study on 70 patients with NSCLC treated surgically in British academic centres [18] and on 550 outpatients and inpatients of academic hospitals in Ankara (Turkey) [19]. Finally – as in this study – some scholars did not show the relationship between patients' level of education and their healthcare service quality expectations [13]. The results obtained in this study and literary references indicate that even if education level has an impact on quality priorities, such interdependence is modulated by a range of other factors. One of them is the already mentioned level of knowledge of the therapeutic process [16]. It is important to note that this factor may not necessarily be a simple derivation of education level. In the internet era, most patients – even the less educated ones – can obtain the necessary information on specific medical procedures even before their first visit to the facility. The next factor that usually translates into a better knowledge of the therapeutic process is the nature of the disease. Those who use the services of medical centres frequently due to the chronic nature of their diseases usually have in-depth knowledge of their condition; this may reflect on their expectations of healthcare service quality. Another factor, with a very high probability of modulating the relationship between education level and service quality expectations, is the material status of the respondents. Following the assumption that more educated respondents are better off financially, it is likely possible to observe the impact of this correlation on their quality priorities – both directly and indirectly – by the way they finance their medical services (higher health insurance contributions, out-of-pocket payments for these services).

Given the potential impact of economic status on patients' expectations regarding healthcare service quality, this relationship was empirically verified. It was demonstrated that improvements in respondents' financial status resulted in: (1) high scores on “Reliability” and “Responsiveness” dimensions and an overall SERVQUAL scale, and (2) a smaller negative gap between expectations and perceptions in “Responsiveness” and “Assurance” dimensions and an overall SERVQUAL scale. Thus, a better financial situation did not translate into the much higher level of service quality expectations but higher scores on perceptions of service quality. It is hard to refer the results of this study to the results of previous studies on the role of economic status as a factor in determining quality priorities due to different mechanisms of financing health services in the various countries. The study carried out by Bahadori et al. [16] on patients with chronic kidney disease receiving treatment in dialysis centres in Iran showed that patients who were better off financially had higher service quality expectations in all SERVQUAL dimensions except for "Reliability". According to the authors of this study, patients with better economic status often did not realise that facility's finance may limit the possibility of providing them with sufficiently high-quality services. If such interdependence existed, it would be difficult to expect of Polish patients – even those who received treatment in private clinics – to not realise the difficult situation in the national health sector. The role of the financial factor as a determinant of medical service quality expectations was assessed indirectly in two other studies – by comparing assessments of insured and uninsured (and thus paying full hospital charges out of pocket) patients. Both studies, on patients of Turkish [19] and Iranian [15] hospitals, confirmed that patients who paid for medical services directly (out of pocket) had higher service quality expectations than if they paid through the insurer. To conclude, it is problematic to consider material status as a factor that determines quality priorities. One of the reasons is that information on income, or financial situation might be sensitive. Consequently, some patients participating in marketing research might not disclose or might give false information. The above limitations and the already mentioned potential confounders such as education level, knowledge of therapeutic process and the complexity of medical service financing system overlap.

The analysis of the impact of the size of place of residence on respondents' assessments of expected and perceived service quality produced interesting observations. It showed that in more populated places the scores on perceived service quality in the "Tangibility" dimension significantly decreased. The above relation appears to result from the fact that competition among health care providers is higher in more populated cities. Therefore, patients who may choose among several institutions at similar substantive level (often employing the same doctors) pay more attention to hardware resources, design and other elements of infrastructure. Based on the available literature, it should be noted that none of the previous studies evaluated the impact of the size of place of residence on respondents' expectations of medical service quality. This may result from the fact that most countries, in which earlier studies have been carried out using a SERVQUAL model, do not have such extensive systems of reporting on the implementation of medical services as Poland.

The final factor evaluated in this study regarding its impact on patients' quality priorities was the annual visit frequency to clinics. The findings showed that high visit frequency resulted in a significantly increased gap between service quality expectations and perceptions in "Empathy" dimension. This result implies that the more frequently patients visited the clinic, the more interest, and concern from personnel they expected, and the more they were disappointed with personnel failure to meet those expectations. Therefore, it appears that regardless of the type of institution, patients with chronic diseases expect from medical personnel more support and more personalised relations. This is consistent with the literature sources; several authors have shown that human factor and interpersonal relationships are the key determinants of healthcare service quality expected by patients [20–24]. Moreover, the human factor is one of the key determinants of patient loyalty to healthcare institutions [25]. The literature data on the impact of visit frequency on service quality expectations and perceptions are unambiguous. On the one hand, it has been shown that outpatients have lower expectations of service quality, which derives from a better knowledge of the therapeutic process [16]. On the other hand, it is known that inpatients subjected to further hospitalisation evaluate service quality worse than patients staying in the hospital for a short time [15,26]. These findings point to significant differences in quality priorities of outpatients and inpatients.

Moreover, they prove how complex the relationship between characteristics of patients and their quality priorities is. The results obtained from the analysis of study factors were not consistent with the literature. Also comparing the results of previous studies did not allow for an unambiguous identification of socio-demographic factors which would affect patients' expectations of service quality. In part, this is due to considerable variations within the cultural context (e.g. social role of women, the authority of a doctor), economic context (e.g. structure of social classes) or legal context (e.g. system of financing health services) of the studies. Additionally, what has already been mentioned, some information such as financial status may be withheld by the respondents or may be subject to reporting errors. It is crucial to remember that: (1) all studies, including this study, cited above involved sick patients, and (2) clinical variables influenced expectations and perceptions of service quality. Several studies have shown that perceived service quality scores improve along with the subjective condition of patient's health.

Both this study and the literature point to the existence of significant gaps between quality expectations and perceptions. Despite different top quality priorities of patients (hardware equipment and facility premises in the case of private clinic patients, and healthy relationships with personnel in the case of public clinic patients), companies should strive for overall improvements in the process of quality management rather than focus on a single dimension.

Conclusions

The results obtained during this study allow for the following conclusions: 1. In the case of patients of both public and private centres, there is a negative gap between service quality expectations and perceptions. 2. The impact of socio-demographic characteristics on patients' expectations and perceptions of service quality was not clear, nor was it statistically significant. 3. The study showed that respondents' place of residence had an impact on scores related to expected service quality and perceived service quality: in the "Tangibility" dimension, scores related to perceived service quality decreased with an increasing population. 4. The study revealed that with age, respondents assigned higher perception scores to "Responsiveness" dimension and the gap between expectations and perceptions became smaller in "Reliability" and "Responsiveness" dimensions. 5. This study did not show that the level of education had an impact on expected and perceived service quality. 6. It showed that improvements in respondents' material status resulted in: (1) high scores on "Reliability" and "Responsiveness" dimensions and an overall SERVQUAL scale, and (2) smaller negative gap between expectations and perceptions in "Responsiveness" and "Assurance" dimensions and an overall SERVQUAL scale. 7. Healthcare organizations should strive to optimize service quality in all dimensions, not in the one identified as a priority for customers of a particular centre.

Conflicts of interest

The authors declared no potential conflicts of interest.

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