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Evaluation of the healthcare service quality — implementation of SERVQUAL method

Ocena jakości usług medycznych — zastosowanie metody SERVQUAL

Abstract

Evaluation of service quality is an important aspect of increasing the quality of services — both public and private. Our study focuses on healthcare services that are of significant importance in the quality's context of residents' life. The research aim of the study was an evaluation of healthcare service quality in the selected public hospital by assessment of service quality dimensions-tangibility, reliability, responsiveness, assurance, empathy. As the research method was selected, the SERVQUAL questionnaire, which was adjusted to the specificity of the researched unit and there were attributes of dimensions identified in the healthcare service. The quantitative research was conducted among 120 public hospital patients of therapeutic department — clients of the healthcare service. The importance of the dimensions of the healthcare service was evaluated and the gap between perceived and expected service quality was identified. The evaluation of the quality of the healthcare service in the analyzed public hospital proved that it is characterized by a relatively high level of assurance and empathy. At the same time, the biggest gap between perceived and expected healthcare service quality was identified in tangibility and responsiveness dimensions.

Keywords
healthcare, service quality, evaluation of service quality, SERVQUAL, public hospitals.

Streszczenie

Ewaluacja jest ważnym etapem w procesie podnoszenia jakości usług — zarówno publicznych, jak i prywatnych. W publikacji przedstawiono wyniki badania dotyczącego oceny jakości usług opieki zdrowotnej, które mają istotne znaczenie w kontekście jakości życia mieszkańców. Celem badawczym była ocena jakości usług opieki zdrowotnej w wybranym szpitalu publicznym poprzez ewaluację wymiarów jakości usług — materialności, rzetelności, reagowania pewności, empatii. Jako metodę badawczą wybrano kwestionariusz SERVQUAL, który został dostosowany do specyfiki usług medycznych poprzez identyfikację atrybutów wymiarów jakości w służbie zdrowia. Badanie ilościowe zostało przeprowadzone wśród 120 pacjentów oddziału terapeutycznego szpitala publicznego — klientów służby zdrowia. Oceniono znaczenie wymiarów usług opieki zdrowotnej i zidentyfikowano lukę pomiędzy postrzeganą a oczekiwaną jakością usług. Ocena jakości opieki zdrowotnej w analizowanym szpitalu publicznym wykazała, że charakteryzuje się ona stosunkowo wysokim poziomem pewności i empatii. Jednocześnie największa luka między postrzeganą a oczekiwaną jakością usług opieki zdrowotnej została zidentyfikowana w wymiarach materialności i reagowania.

Słowa kluczowe
opieka medyczna, jakość usług, ocena jakości usług, SERVQUAL, szpitale publiczne

Introduction

Service quality plays a crucial role in forming our satisfaction and trustworthiness with service providers (Zeithaml, 1988; Zeithaml et al., 1996).

Despite of that, the definition of quality remains to be one of the most debatable subject in the literature. It is easier to define goods quality as it could be measured objectively with such indicators as reliability or durability (Parasuraman et al.,

1988), while service quality should not be characterized by these properties. Considering that, a lack of consensus on one definition as well as understanding quality as a concept has led to a situation when many authors define it in different ways (Azam et al., 2012). According to Parasuraman, there are some key elements which make up the quality of service such as respect of human dignity in behaviors, sufficient professional skills and qualifications of service providers, confidence and trust from the customers' side, rapid respond to the user's problems and complaints, in-time and reliable services as well as neat and tidy appearance (Parasuraman et al., 1988; Mohammadi et al., 2003; Jasinskas et al., 2016). Deming (Deming, 1988), Feigenbaum (Feigenbaum, 1983) and Ishikawa (Ishikawa, 1985), for example, believe that the satisfaction of customers under their needs and expectations can fully stand for quality (Crosby, 1979), whereas Juran (Juran, 1988) alleges that quality of service should include both specification and customer satisfaction simultaneously.

At the same time, healthcare service is an essential element which influences the quality of life of residents and which has a great impact on the country's economy (Javed et al., 2019). The research aim of the study is the evaluation of healthcare service quality in the selected public hospital by assessment of service quality dimensions-tangibility, reliability, responsiveness, assurance, and empathy.

The method implemented for evaluation of healthcare service quality was SERVQUAL, which is among the main methods for measuring service quality (Yarmak & Rollnik-Sadowska, 2022). SERVQUAL is a framework that is widely used to measure customer satisfaction. In measuring service quality variables, Zeithaml, Parasuraman and Leonard identified five dimensions of service quality measures, namely tangibility, reliability, responsiveness, assurance, empathy. This kind of measurement is known as the Service Quality (SERVQUAL) model (Triandini et al., 2021). It is a gap method, which identifies gaps in service delivery and its perception by the consumer. Based on the available literature (Manulik et al., 2016), it was hypothesized that, in healthcare services, irrespective of the dimension or type of facility, quality perceptions would be noticeably lower than expectations.

Literature analysis

In any cases, while measuring quality of service, there should be considered both expectations of the customers and their perceptions. That is why we should consider different factors, which may affect the expectations of clients in relation to service and their perception. If it comes to expectations, these factors may concern different cultures, individual wants, communication, customers' experiences and even environmental surroundings (Mohammadi & Shoghli, 2008). The difference between consumer's expectation of service and how this service has been performed is called service quality gap (Cronin & Taylor, 1992). The more significant the quality gap, the higher the frustration of clients from received service quality.

One branch of the service quality is healthcare service quality (HCSQ), which definition is based on the mentioned gap characteristics. Healthcare sector is the main issue in public service (Yarmak & Rollnik-Sadowska, 2022) which has been significantly researched for the last 10 years. There is a clearly increasing trend in the number of

Figure 1. Trend of the number of published articles about healthcare quality service from 2012 to 2021
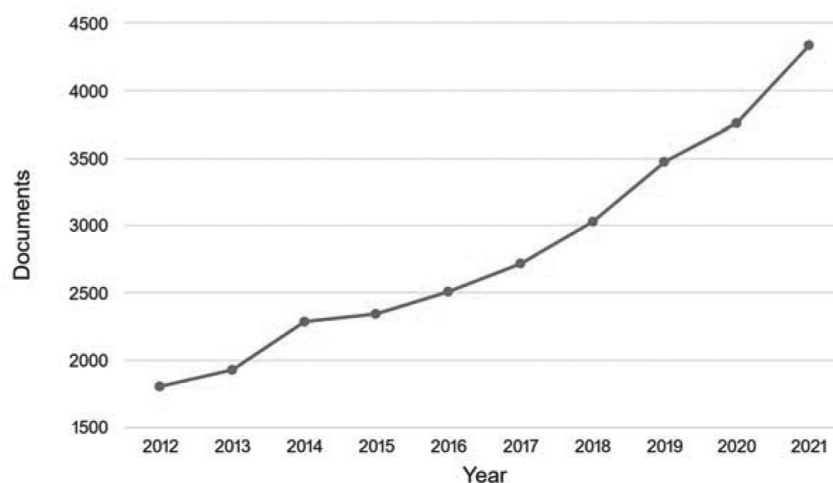
Source: own study on the base of Scopus database.

publications concerning healthcare quality service in the Scopus database from 2012 (Figure 1).

For healthcare organization trying to deliver a service of high quality, it is vitally important to be appreciated by consumers. It is a particular place where people's lives are protected and every mistake could be irreparable. The education of the population has been growing that makes it difficult to provide a service of poor quality being unmarked and successful in this highly competitive market (Parasuraman et al., 1991; Cronin & Taylor, 1992). Patient's demands toward level of quality in healthcare sector have increased (Attafar et al., 2010) also because this sector is an integral part of our society (Jackson, 2000) that expects it to be provided quickly and flawlessly (Mohammadi & Shoghli, 2008) up to now. Although HCSQ may be defined as an ability of system to provide to citizens required healthcare services, there are many events during the treatment processes which define the condition of the patient after treatment and impose on result. Obviously, not only the patient's condition but also, as in a case of quality in common, their perception of healthcare service may influence the quality of healthcare service (Lee, 2016). Nowadays, the quality has been emphasized as a principal and inherent feature of health organizations worldwide, (Forrellat-Barrios, 2014). By the Agency for Healthcare Research and Quality, they define the HCSQ as the capacity of services based on scientific knowledge which is provided to all who could benefit and refraining from providing services to those not likely to benefit (Rocha & Sara Costa, 2021).

More often, HCSQ could be met in medicine (Figure 2), which is not wondering as this definition has to do directly with this sphere. Nursing is also one discipline where healthcare quality service is often discussed. However, the rate of occurrence is rare comparing with medicine field. Such sectors as computer science, engineering and social science are also popular with HCSQ occurrence. Also, this definition is more or less widely spreading in health professions, business, management and accounting as well as biochemistry and molecular biology sectors.

According to the American Institute of Medicine, there are six key aspects which characterize hospitals service and they are used to defining HCSQ (Institute of Medicine, 2005) namely: 1) safety; 2) patient-orientation and appropriate 3) effectiveness; 4) equitableness; 5) access and timeliness; 6) efficacy. Safety, which underlies freedom from errors and adverse effects, has been put in the first place in quality definition since concepts of preventable harm have been first introduced by Dame Florence Nightingale (Fee & Garofalo, 2010). Besides safety, HCSQ must be centered on the patients, be appropriate and cannot discriminate anybody (Robertson-Preidler et al., 2017). Medical acts should be effective, that means that improvements of health status must be attained entirely. Donabedian defines effectiveness as the degree to which attainable health improvements could be realized (Donabedian, 1988). Another quality dimension is equitableness, which definition, however, is the most debatable (Lane et al., 2017) among other aspects. More often, equity of access to HCSQ implies similar resources and treatment for similar health state (Institute of Medicine, 2005). The last component of HCSQ, efficacy, concerns possibly lower cost for better

Figure 2. Word map of HCSQ depending on its occurrence in sectors

Source: own study on the base of WordArt program and Scopus database.

healthcare outcomes (Donabedian, 1990). From all written above, it can be noticed that the patient's characteristics have not been taken into account when defining the quality of the delivered service. As with service quality, the definition of HCSQ has also different points of view.

Despite of attempts to adopt one concept, all indicators are not perfect and do not meet any particular requirements (Azam et al., 2012). According to Beauchamp, for example, there are only four principles on which every medical and nursing care must be based (Beauchamp & Childress, 2008) namely: 1) beneficence (do good); 2) non-maleficence (do not make harm); 3) justice in terms of resources allocation; 4) autonomy (in relation to the will of patients). Joss and Kogan (Joss & Kogan, 1995), McLaughlin and Kaluzny (McLaughlin & Kaluzny, 2006) have agreed that the intangibility of healthcare quality service results from patients––providers interactions and the process of HCSQ.

There are not only patients but also employees (functional and technical customers) (Zarei et al., 2012; Donabedian, 2005) needed to measure healthcare service quality. While patients cannot adequately estimate the technical side of healthcare service, such as rightness of diagnosis or appropriateness of treatment, employees can easily evaluate quality of service measuring hygiene of personnel and clearness of wards (Butt & Cyril, 2010). That's why all material aspects (tangibility) such as infrastructure, equipment, decoration of inner space play an important role in fulfilling the qualified medical care (González, 1996). Besides this, non-healthcare workers, who perform administrative work in hospital, have also great impact on provided quality and can intervene with people satisfaction (Vega, 2017). However, Ovretveit states that because of plenty of skills and professionals involved in the healthcare process as well as because of physical and psychological weakness of patients, it is hard to adequately measure provided quality service (Ovretveit, 2004) in the healthcare sector. So, considering the fact that healthcare staff and administrative workers presents healthcare organizations, it is crucially important for personnel while providing service of high quality both to be in constant contact with patients and to maintain adequate and polite relationships with consumers in a proper and timely manner (Messarina, 2016).

Because of the difficulty of assessment of the quality service, there were various quality measurement points introduced by different organizations of healthcare profile and/or variety of accreditation and certification systems. The chief healthcare accreditation agency — Joint Commission International (JCI), for instance, considers also human resources, environment for patients, personnel, visitors, and subjects of care treatment while carries out its accreditation as long as the healthcare unit meets special conditions required by JCI (Lee, 2016),

The essence of all this introduction is to improve various kinds of healthcare problems, increase customer satisfaction by minimizing the risk and increase benefits which might appear during the healthcare process (Rodríguez, 2013; Riveros, 2007; Barrios-Ipenza et al., 2020). Efficiency in a healthcare organization means also adequate use of resources which are deficient. Therefore, effective management is one of the main ways to improve quality service in healthcare service, including management of process waiting times (Miranda et al., 2012). As a result it is recommended for successful governing and improving the quality that all the managers should permanently analyze the conditions of their organizations (Barrios-Ipenza et al., 2020) and do some researches which are based on comparing current and desirable conditions of patients as well as, for increasing patients' satisfaction, try to apply distinguish programs (Agha Mollaei et al., 2007) for different sections.

Because of the complex nature of healthcare quality service, its access requires to be supported by methods which will take this nature into account. There are some elements which must be included while measuring the quality in healthcare: patient safety, care appropriateness or access to service (Almeida-Dias et al., 2010).

One of the methods of healthcare quality service evaluation is Multiple Criteria Decision Aiding (MCDA) — Electre Tri-nC, which criteria allow to assess the performance of each hospital (Almeida-Dias et al., 2010). However, using this method, there is at least one hospital which must be defined as a benchmark for that category. Decision aiding process should involve interaction between the decision-maker (DM) and the analyst and provide the preference information. For construction DM model, there are preferences elements that defined through particular reference should be attributed to the criteria (Almeida-Dias et al., 2012).

Another method which could also be used when assessing of healthcare quality (Corrente et al., 2016) is a hierarchical-based method. For both-MCDA and hierarchical-based method, a set of parameters (Corrente et al., 2013) is used: 1. actions (objects of the decision), 2. criteria (for assessing the action's performance), 3. performance table (all action's performance), 4. categories (contain the actions according to the model), 5. reference actions (representatives of categories), 6. weights (importance of each criterion), 7. veto threshold (it can empower criteria, but may be reinforced by veto power), 8. credibility level.

Method for evaluation of healthcare quality from the patients' perspective is the public-hospital service quality model PubHosQual (Aagja & Garg, 2010). It uses five dimensions (admission, medical service, overall service, discharge and social responsibility) which are divided into 24 items. However, this method does not consider the technical aspects of healthcare service; it was based on Indian healthcare sector and could not be, unfortunately, applied to healthcare service worldwide (Kilbourne et al., 2004).

According to Donabedian's model, parameters which should be used for measuring the HCSQ must include efficacy, effectiveness, efficiency, optimality, acceptability, legitimacy and equity. During the process of evaluation of the quality of healthcare service, such items as structure, process and outcome are necessary to be measured. Structure underlies qualifications of specialists, settings and managerial system stand for process of activity, and outcome means either survival of patient or their returning to the initial point of health state (Donabedian & Bashshur, 2003). Donabedian states that the quality of healthcare service depends on technical and interpersonal elements (Donabedian, 1987). Technical care relates to treatment aspects, whereas interpersonal care includes the communicating factor. However, Zarei (Zarei et al., 2012) stated that technical quality focuses on skills and the accuracy of procedures, while functional, or process, quality concentrates on how the services are provided. Both authors agreed that, in measuring of HCSQ, clear criteria and opinions of the main stakeholders should be used (Padma et al., 2009).

Since the consumer satisfaction as a result of user interaction with the service is a key factor in service quality assessment (Linder-Pelz, 1982), this assessment is assumed to be a divergence between expectation and perception of a service provider in service sector (Curry & Sinclair, 2002). Considering that, the SERVQUAL method (Parasuraman et al., 1985; Ampaw, 2019) is stated to be the most appropriate system for service assessment. It remains, despite criticism, the universal model for measuring service quality, which could be applied for evaluation of service quality in different fields, such as industry (Kavandi & Shakery, 2010), service department (Kazemi & Alimardani, 2008), restaurants (Raei, 2013), municipalities (Nazemi, 2008), higher education (Glavandi et al., 2012), banks (Abdellahi et al., 2011), and healthcare units (Yarmak & Rollnik-Sadowska, 2022). Despite of universality of SERVQUAL scale, it must be adapted and tested for the specific needs of a particular organization (Butt & Cyril, 2010). There were attempts by some researchers to adjust it specially for healthcare organizations (Juwaheer

& Kassean, 2006; Camilleri & O'Callaghan, 1998; Black, 2000). However, dimensions which define consumer satisfaction were disputable. Some scholars proposed to use such dimensions as communication, cost, facility, competence, and demeanor (Andaleed, 1998) in an investigation of customer satisfaction in healthcare sector. Others (Raduan et al. 2004) suggested that SERVQUAL dimensions should include security, performance, aesthetics, convenience, economy and reliability. Carman (Carman, 1990) proposed its own dimensions: admission service, tangible accommodation, food and privacy, nursing care, explanation of treatment, access and courtesy afforded to visitors, discharge planning and patient accounting. Only four criteria (caring, empathy, reliability and responsiveness) were used by Turker and Adams (Tucker & Adams, 2001) in their research on HCSQ. Jabnoun and Chaker (Jabnoun & Chacker, 2003) measured quality in private and public healthcare sector using five dimensions (reliability, responsiveness, supporting skills, empathy and tangibles) to compare service-quality perceptions.

The research aim of the current study was an evaluation of healthcare service quality in the selected public hospital by assessment of service quality in five dimensions-tangibility, reliability, responsiveness, assurance, empathy.
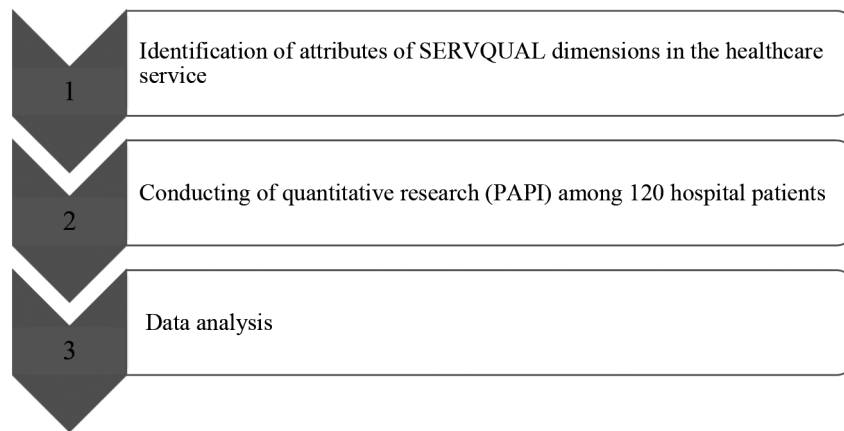
Research methodology

Getting the research aim was assured by conducting three stages of the research process — Figure 3. In the first stage, the SERVQUAL questionnaire was adjusted to the specificity of researched unit and there were identified attributes of dimensions in the healthcare service. As the next stage, there was a quantitative research conducted among 120 hospital patients — clients of the healthcare service. In the last stage, the obtained data was analyzed by evaluation of importance of the dimensions of the healthcare service quality as well as identification of the gap between expected and perceived service.

The quantitative study was conducted in a public hospital of Podlaski region (Poland) in the last quarter of 2021. There were 120 randomly selected patients analyzed for differences in responses of expected and received quality of the healthcare service. All of them were covered at least of 24 hours hospitalization.

SERVQUAL method was used to measure quality in the hospital. There were 22 questions made up which allowed to characterize 5 dimensions (Table 1) such as tangibility (all material aspects with inside and outside elements), reliability (which has to do

Figure 3. Stages of research process

1 — Identification of attributes of SERVQUAL dimensions in the healthcare service

2 — Conducting of quantitative research (PAPI) among 120 hospital patients

3 — Data analysis

Source: own study.

with the level to which patient can rely on medical staff including transparency of hospital as well as timeliness of medical procedures), responsiveness (how quickly and efficiently personnel take care of patients), assurance (measuring of staff' politeness and professionalism) and empathy (at what level personnel can empathize with the needs of patients and how staff can consider specific needs of patients).

Research results

As the third stage of the research process, all responses were summed up and the differences between expected and perceived quality were established and compared (Table 2). The negative result in gap means that perceived quality does not meet people's expectation whereas positive result

Table 1. Attributes of SERVQUAL dimensions in the healthcare service

No.	Dimension	Attributes
1.	Tangibility	1. Attractiveness of the external space of a medical facility and good signage 2. Convenience of the facility and spacious parking 3. Comfort in usage of the internal space of the medical facility 4. Upgraded research equipment 5. Transparency of website and readability of information in brochures
2.	Reliability	6. Certain and quick access to all specialists 7. Medical examination and testing on-time 8. Abidance by the law 9. Transparency and legality of documentation
3.	Responsiveness	10. Timeliness information from medical staff about complications 11. Availability of medical personnel 12. Readiness of medical staff and willingness to help the patient 13. Efficiency of work of medical staff 14. Information from medical personnel about all stages of the medical process
4.	Assurance	15. Confidence of medical staff 16. Politeness and professionalism of personnel 17. Reaction of medical staff to answers from patients 18. Experience and competences of personnel
5.	Empathy	19. Individual approach to patients 20. Taking into account specific needs of patients 21. Understanding the patients' needs 22. Level of patients participating in the treatment process

Source: own study.

**Table 2. Average values of admitted points to expected and perceptible service and gaps
in the relation to individual dimensions**

Dimension	Expectation (E)	Perception (P)	Gap (P–E)	Weight (%)	Weight × Gap
Tangibility	4.41	3.59	–0.83	22.8	–0.19
Reliability	4.44	3.77	–0.68	16.6	–0.11
Responsiveness	4.75	3.99	–0.77	17.1	–0.13
Assurance	4.82	4.23	–0.60	18.1	–0.11
Empathy	4.81	4.22	–0.60	25.5	–0.15

Source: own study.

says that patients do not expect quality to be so high. The weights were obtained by gathering the opinion of respondents in terms of the level of importance of the analyzed dimensions. It occurred that the most important dimensions were empathy and tangibility and the least important — reliability and responsiveness.

It is clearly seen that, before being weighted, the biggest gap was observed in quality of material aspects (–0.83), while the best results in quality was noticed in cases of assurance and empathy dimensions. After considering weights, the tangibility dimension remained with the biggest gap between expected and perceived service, while empathy with the most significant weight took up the second biggest gap (Figure 4).

Considering the general level of quality of the healthcare service in the analyzed hospital, it occurred that the gap of weighted result improved from –0.69 of unweighted result to –0.14. (Figure 5).

Comparing all dimensions statistically (Table 3), it can be noticed that the greatest difference between perceived and expected quality in favor of expected one almost in all dimensions made up 2 points, apart from assurance where this difference was 1.75. Moreover, in the assurance dimension the difference between received and expected quality, where perceived service exceeded customer' expectations, was the most significant (1 point) comparing to other aspects, whereas reliability was less satisfied by patients because this difference was only 0.5 point.

It can be seen from the Table 3 that with three dimensions such as reliability, assurance and empathy one fourth of responses and less showed that the gap between perceived and expected quality was –1 or lower whereas at least 75% responses showed the gap was –1 or more. In all cases, perceived quality did not meet the expected one. These results were better in case of responsiveness and tangibility sectors, where 25%

Figure 4. The significance of dimensions before and after results being weighted
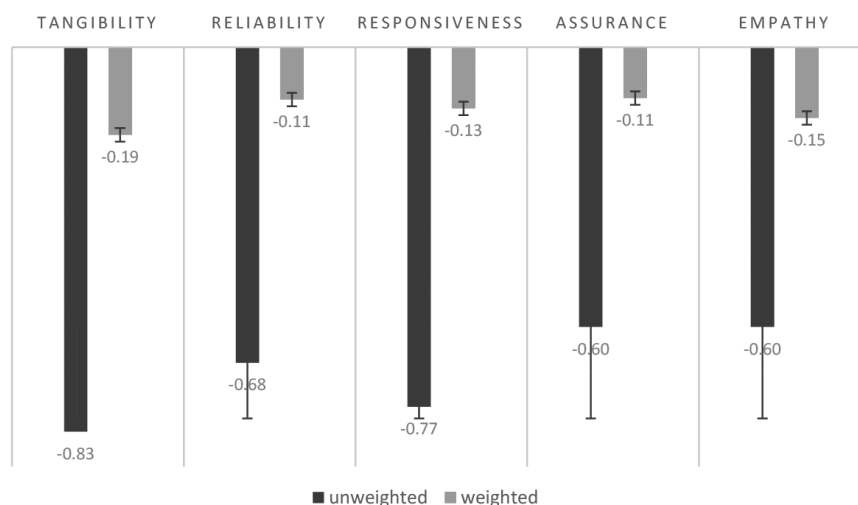
Source: own study.

Figure 5. Total quality of healthcare service before and after results being weighted

UNWEIGHTED   WEIGHTED

-0.14

-0.69

Source: own study.

Table 3. Statistics of dimensions of SERVQUAL

Variable	N	Mean	Confidence interval –95%	Confidence interval 95%	Median	Minimum	Maximum	Bottom Quartile	Top Quartile	Gap	Std. Deviation
Tangibility	120	–0.83	–0.93	–0.72	–0.80	–2.00	0.60	–1.40	–0.40	2.60	0.57
Reliability	120	–0.68	–0.78	–0.58	–0.63	–2.00	0.50	–1.00	–0.25	2.50	0.56
Responsiveness	120	–0.77	–0.88	–0.67	–0.80	–2.00	0.80	–1.10	–0.20	2.80	0.58
Assurance	120	–0.60	–0.70	–0.50	–0.75	–1.75	1.00	–1.00	0.00	2.75	0.56
Empathy	120	–0.60	–0.70	–0.50	–0.75	–2.00	0.75	–1.00	0.00	2.75	0.58

Source: own study based on STATISTICA software.

respondents and less indicated that perceived quality was worse than they expected by 1.1 and 1.4 points and less accordingly, while 75% and more patients showed that perceived quality was worse than they expected by 1.1 points (responsiveness) and 1.4 points (tangibility) or more.

For median, the best result was in case of reliability dimension, since at least 50% of answers presented that the respondents were dissatisfied by perceived quality by 0.63 points, whereas, dissatisfaction of half of all respondents and less made up 0.63 points and less of a difference between perceived and expected quality in this aspect. At the same time the worst outcome was while tangibility and responsiveness were evaluated, as in both cases at least 50% of respondents showed they were not satisfied by perceived quality in these dimensions by 0.8 points and more, while 50% patients and less answered that perceived quality was lower than expected one by 0.8 points and less.

The third analyzed quarter showed that as in the case with the first quarter, assurance and empathy have the best results as 75% patients and less responded that perceived quality of both previous dimensions was the same they had expected or worse while 25% respondents and more indicated that quality was on the expected level or better. Unfortunately, the quality of tangibility dimension was the worst, because 75% of patients and less said that the quality of material aspects differed from expected by 0.4 points and fewer, whereas 25% of the interviewed were dissatisfied by perceived quality in tangibility aspect by at least 0.4 points.

It is easy to notice that the standard deviation differs little, while in analysis of the mean it can be seen that the average of the most satisfied with perceived quality was with assurance and empathy when the difference between perceived and expected quality in favor of perceived one was 0.6 points in both cases. Greater dissatisfaction was on average

Table 4. Ranges of typical answers depending on dimensions

Dimension	Typical answer
Tangibility	$-1.39 < x_{typ} < -0.25$
Reliability	$-1.24 < x_{typ} < -0.12$
Responsiveness	$-1.35 < x_{typ} < -0.19$
Assurance	$-1.24 < x_{typ} < 0.04$
Empathy	$-1.18 < x_{typ} < -0.02$

Source: own study.

with measuring of material aspects where mean was 0.83 points (in favor of perceived quality). These indicators show that the difference in perceived and expected quality in the tangibility dimension was the greatest and ranged from –1.39 to –0.25 (Table 4).

With assurance, people typically responded from 1.24 points (when they were dissatisfied by perceived quality) to 0.04 (when patients did not expect to receive so high quality) and that was the better result when analyzing this indicator.

Based on the above results, we can distinguish that such dimensions as assurance, empathy and reliability obtained better results and tangibility aspect got the worst result.

Using the STATISTICA software, an Ishikawa Cause-and-Effect Diagram was built (Figure 6), where all the attributes of each dimension were included. After assigning them the mean scores which were received from the respondents in the first part of the questionnaire and which reflects the level of quality expectation in each aspect for them, the most important areas for the participants were distinguished by identifying those that had significant impact on patient's satisfaction. Then the second Ishikawa diagram was created, which included only significant areas (Figure 7). There were such areas as certain and quick access to all specialists, medical examination and testing on-time, abidance by the law, transparency and legality of documentation, information from personnel about all stages of the medical process, timeliness information from medical staff about complication, reaction of medical staff to answers from patients, experience and competence of personnel, confidence of medical staff.

The most significant dimensions for the patients of analyzed hospital are reliability, responsiveness and assurance, as they pay attention mostly to aspects of these dimensions. Whereas empathy and tangibility were not so crucial for clients as they pointed no aspects of those spheres.

Figure 6. Cause-and-Effect Diagram of Ishikawa before distinguishing of significant aspects
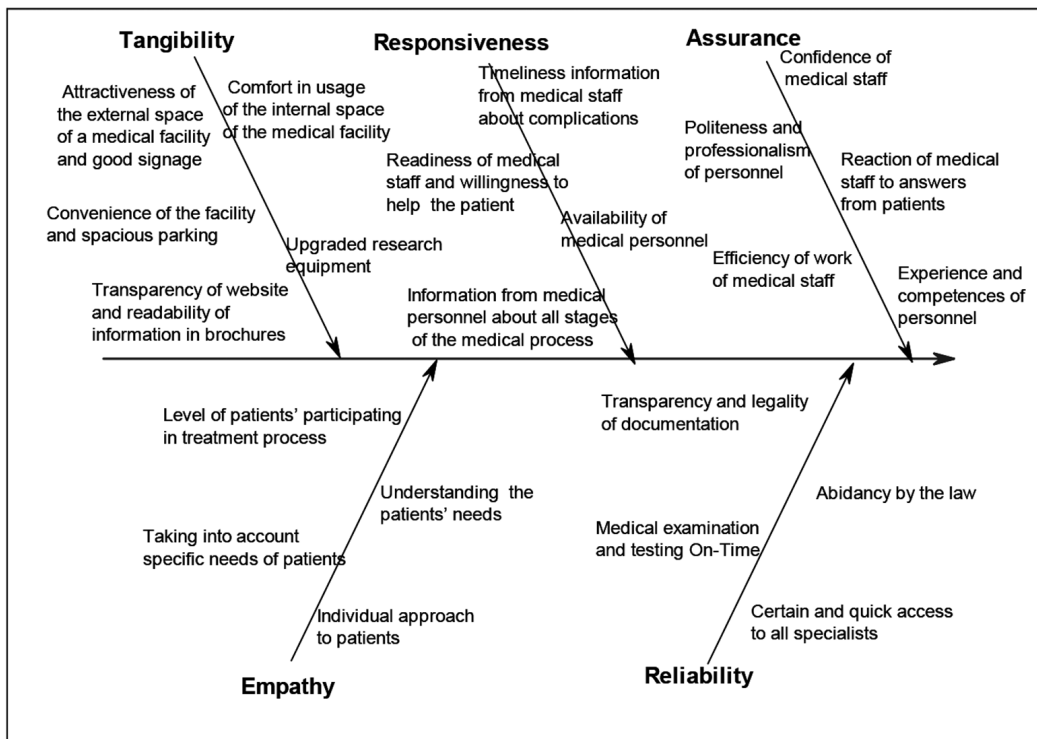
Source: own study based on STATISTICA software.

Figure 7. Cause-and-Effect Diagram of Ishikawa after distinguishing of significant aspects
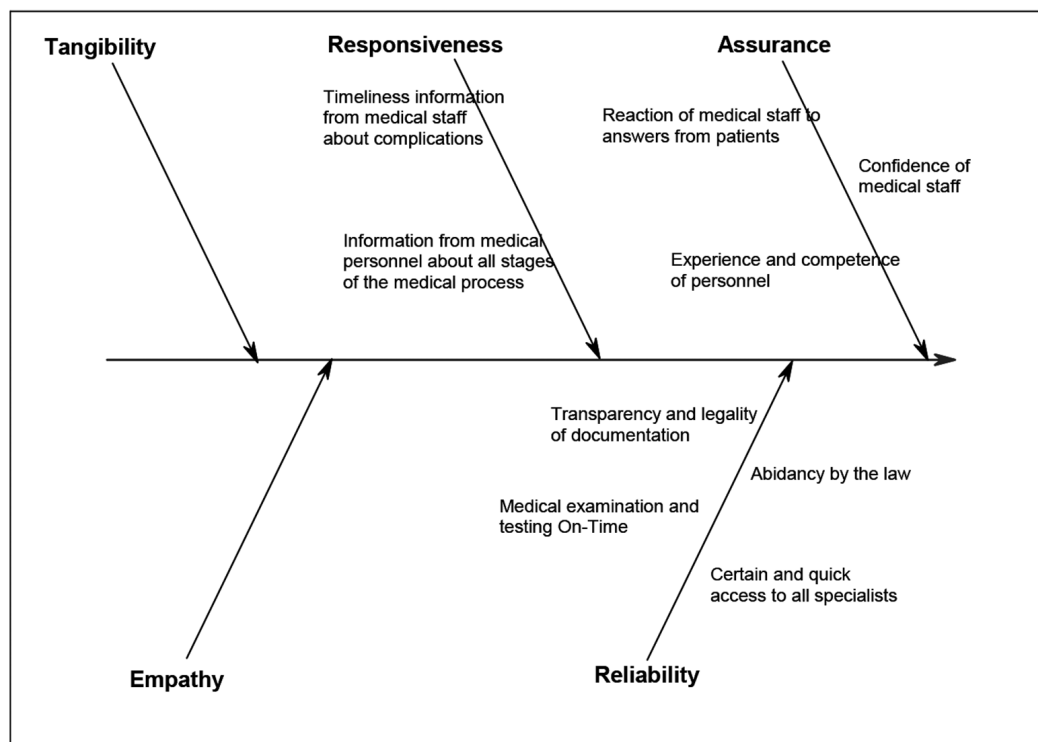
Source: own study based on STATISTICA software.

Analyzing the Figure 7, it could be clearly seen that tangibility and empathy spheres are not so important as reliability, responsiveness and assurance. Patients of analyzed hospital take care of legal documents in hospital, how administration obeys the law and if there is reliable access to all specialists and tests on-time. Patients prefer to be served by experienced personnel, who always give feedback to them and command them with respect and confidence. It is also important for patients to be informed about all stages of the medical process and complications which may arouse because of this process.

Deepen the analysis of the aspects that make up the individual dimensions, it identified the difference between perceived and expected quality for each aspect (Table 5). There were also calculated the ranks, which result from minimum (which means the greatest dissatisfaction of the respondents between perceived and expected quality) to maximum, which shows that the difference between expected and received quality was minimal.

The greatest dissatisfaction respondents expressed in such aspects as the convenience and lack of a parking (–1.64), access to all specialists (–1.09), the timeliness of informing patients about all stages of the medical process and tests (–0.84), information from medical personnel about all

stages of the medical process (–0.83) and medical examination and testing On-time (–0.81). Among these spheres, it marked four last aspects as important to the respondents (Figure 5). In such aspects as attractiveness of the external space of a medical facility and good signage (–0.48), abidance by the law (–0.47) and transparency and legality of documentation (–0.34) patients received services of relatively high quality. Moreover, two of them — abidance by the law and transparency and legality of documentation — were mentioned as significant for respondents.

To important aspects which were not the sources of satisfaction for consumers could be included information from medical personnel about all stages of the medical process (–0.83), medical examination and testing on-time (–0.81), reaction of medical staff to answers from patients (–0.66). It means that management should pay great attention to improve the quality in these aspects.

Although reaction of medical staff to answers from patients, confidence of medical staff as well as experience and competences of personnel were also estimated at relatively high level of dissatisfaction, however the situation with these aspects looked better comparing with the first noticed aspects (gap between received and expected quality in these sectors was –0.66, –0.61 and –0.54 respectfully). It means that these aspects do not need urgent

Table 5. Difference between expected and receiving quality (gap) according to each aspect

Attribute	Gap
Convenience of the facility and spacious parking	−1,64
Certain and quick access to all specialists	**−1,09**
Timeliness information from medical staff about complications	**−0,84**
Information from medical personnel about all stages of the medical process	**−0,83**
Medical examination and testing On-Time	**−0,81**
Efficiency of work of medical staff	−0,78
Availability of medical personnel	−0,77
Transparency of website and readability of information in brochures	−0,74
Individual approach to patients	−0,67
Reaction of medical staff to answers from patients	**−0,66**
Readiness of medical staff and willingness to help the patient	−0,65
Comfort in usage of the internal space of the medical facility	−0,63
Upgraded research equipment	−0,63
Level of patients participating in the treatment process	−0,62
Confidence of medical staff	**−0,61**
Taking into account specific needs of patients	−0,61
Politeness and professionalism of personnel	−0,59
Experience and competences of personnel	**−0,54**
Understanding of the needs of patients	−0,51
Attractiveness of the external space of a medical facility and good signage	−0,48
Abidance by the law	**−0,47**
Transparency and legality of documentation	**−0,34**

Source: own study.

intervention, all of them require to be changed in the long term, which allows analyzed hospital to be quality service provider for its stakeholders' patients.

Discussion

In our study, all analyzed aspects of healthcare service quality were assessed at dissatisfied positions and that fact was not surprising in comparison with other studies. In some studies it could be found that all five dimensions in healthcare sectors which were analyzed with SERVQUAL tool had a negative gap between patients' expectations and perceptions (Nekoei-Moghadam & Amiresmaili, 2011), in some work only some dimensions had negative differences (Ajam et al., 2014).

If it comes to dimensions' evaluation of the healthcare service provided by the analysed hospital, tangibility reached the highest dissatisfaction despite of being unimportant aspect for respondents. Comparing with Parasuraman et al. research, the tangibility dimension also was not very important from the patients' viewpoint (Mohammadi & Shoghli, 2008) and

that dimension had the largest gap between expected and receiving quality (Torabipour et al., 2016).

There were also studies where the tangibility dimension had a slight discrepancy between patients' expectations and perceptions (Nadi et al., 2016; Al-Borie & Damanhouri, 2013). Assurance and empathy dimensions had the smallest gap, however, it is significantly important for consumers of the analyzed hospital. But in literature there are many examples where assurance, empathy (Latifian & Khadivian, 2015; Zarei et al., 2012) responsibility (Rezaei et al., 2016) and reliability (Gholami et al., 2014) had the smallest gap and plenty of examples when these dimensions (assurance, empathy (Ghobadi et al., 2014), responsibility (Aghamolaei et al., 2014) and reliability (Torabipour et al., 2016) had big differences between patients' perception and expectations. This means that there is not some law or rule which work for every hospital and the results depend on the specificity of medical organization.

In literature, there could be found studies which differed from our study. For instance, the differences occurred in the subjects of investigation and in tools used during the study. Some works established that patients' scores depend on

hospitals: their perceptions were higher than expected in ordinary hospital but lower than expected in a high-quality hospital (Bakar et al., 2008), others show differences in healthcare quality between private and public sector (Javed et al., 2018).

Other researchers used modified SERVQUAL tool — HEALTHQUAL (Nemati et al., 2020) to evaluate the healthcare service quality and presented that with HEALTHQUAL there were slightly different results and larger gaps rather than in SERVQUAL (Sharifi et al., 2021).

Conclusions

The conducted research allows for evaluation of the quality of the healthcare service in the analyzed public hospital, which provides practical recommendation for the managers of that entity. The research findings proved that patients experience of relatively high level of assurance and empathy. This means that medical staff is not only polite but also professional and experienced. Patients identified a high level of personnel competency which, altogether with previous characteristics, forms a good base for confidence to personnel of researched hospital. Employees consider and understand the specific needs of consumers. Hospital encourages individual approach, whereas the patient's opinion during the treatment process is often considered..

For specialists' availability and documents' transparency, hospital should have been more prepared. The hours of waiting for medical examination and necessary testing are a little prolonged, which reflects on answer in our study where the gap between exceptions and perceptions is bigger as the services are not always provided under the principles and standards of law.

The research results allowed for positive verification of the hypothesis about the existence of gaps in service delivery and its perception by the consumer in all analyzed dimensions. There was identified the biggest gap between perceived and experienced service in two dimensions — responsiveness and tangibility. This indicates that for the patients, the interior and exterior of the researched hospital are not attractive, the parking is not spacious enough, the website is not enough transparent, and equipment is not satisfying. Besides this, the company does not guarantee timely information about complication in its work, it does not inform consumers about all stages of the medical process. Those shortcomings should arouse attention of hospital managers and indicate the areas for improvement.

All the answers are characterized by a large standard deviation, which means that the dispersion of opinions between customers is significant. Some opinions were positive, while a greater number of recipients of the service have negative experiences.

After assigning the weights, it occurred that the empathy and tangibility of the service provider are of great importance to customers. Therefore, it is recommended for managers to pay attention to tangibility and change the hospital area, because namely tangibility (compared with empathy) is one of the worst assessed dimensions in the analyzed public hospital.

The performed calculation of the unweighted ratio clearly shows that the expectations of patients of public hospital services regarding the service performed were not met and the difference amounts to 0.69. On the other hand, taking into account the weights with which clients showed the relative importance of individual areas, the difference between expectations and the perception of the service decreases to 0.14, which, although, is not so critical, but requires some analysis of all dimensions.

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