Service quality in healthcare: quality improvement initiatives through the prism of patients’ and providers’ perspectives

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Efficient functioning of service providing organizations highly depends on quality of their services as it contributes to companies’ competitiveness and customers’ satisfaction (Gill, 2009, p. 533). Thus, quality management should be an integral part of service organizations’ performance.

Healthcare industry is a specific representative of the service industry that regards quality as a fundamental value of medical care. To manage quality within the healthcare settings is a challenging task due to its complexity.

Hence, the purpose of the current qualitative study was to propose an efficient approach toward quality management within the healthcare industry. In order to be efficient quality management should consider issues that relate to the healthcare organizations’ complexity such as different interests of a wide range of parties involved in healthcare service processes. As mentioned parties are presented by patients, physicians, nurses, receptionists and others, their perceptions of quality could be rather distinctive. So, the first step towards achieving the purpose of the study was to discover an aligned or combined perception of healthcare service quality from patients’ and healthcare service providers’ perspectives. Common perception of quality would give opportunity to focus on improvement of aspects that are essential for the core stakeholders of healthcare organizations. Hence, the second intention that would contribute to efficient quality management was to develop a combined quality management model based on an aligned or combined quality perception.

In order to investigate a common perception of quality, we conducted semi-structured individual interviews with patients and healthcare service providers. Having analyzed obtained data we revealed the most vital (sub-) dimensions of service quality for both parties. These aspects relates to the providing information for the patients, emotional support, involving patients into the treatment and having good medical equipment. Also, some important (sub-) dimensions were not stressed by both patients and providers, so we supplemented common (sub-) dimensions with these distinctive aspects. For example, providers mentioned professional skills dimension as the most essential aspect of healthcare service quality. In conclusion, we constructed one common perception of healthcare service quality consisting of common and distinct aspects of healthcare service quality.

For the purpose of developing a combined quality management model we selected the most appropriate values, methodologies and tools from such quality management initiatives as TQM, Lean and Six Sigma. The selection was guided by dimensions from the common perception of healthcare service quality.

The conducted study contributes to theoretical as well as practical areas. We believe that our research supplemented Quality Management theory by proposing beneficial combinations of TQM, Lean and Six Sigma and Service Quality literature by revealing additional aspects of service quality perception. Practical field will gain from the proposed flexible approach toward assembling quality management model.

Key words: Service quality, healthcare service quality, perceptions of quality, patients and healthcare service providers, efficient quality management, TQM, Lean, Six Sigma.
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1. Introduction

The main aim of the first chapter is to give an insight on the subject of the current research as well as present evidences that underpin relevance of the conducted study. Also we will provide argumentations that support solid reasoning of stated research questions and the purpose of the research. In order to depict the flow of the paper, the structure of the research will be presented. Moreover, limitations applied throughout the study will be elaborated in the end of the chapter.

1.1. Background

According to the data from the World Bank statistics, the service industry presents a significant part of the World Economy that accounted for around 70 percent of GDP in the World in 2010 (The World Bank Group, 2012). Hereby, current studies could be directed to investigate the main issues in terms of service industries.

One of the main dimensions in terms of an efficient service organizations’ performance is considered to be service quality as quality is vital for market competition, brand name and customers’ satisfaction (Gill, 2009, p. 533). In favor of importance of having high quality within an organization, Nilssona et al. (2001, cited in Gill, 2009, p. 531) detected that firms that got quality awards performed better in relation of income level and stock market value compared to other companies.

Discussing service quality we should point that it differs from another type of quality, namely quality of products. One cause of difference could be complexity of service quality existing due to several features such as an absence of tangible evidences of service quality, behavioral component of service delivery, close interaction between service organizations and its customers (Parasuraman et al., 1985, p. 42). Another reason of complexity could be an absence of one common service quality definition (Gill, 2009, p. 533). Difficulties in defining a common concept of service quality consist in its ingredients that could be tangible and intangible as well as in subjective nature of humans’ evaluation of services that differ for product quality (Yoo & Park, 2007, p. 908).

Also one common definition cannot be detected within such a case of the service industry as healthcare. The lack of one common definition in the healthcare could be explained by an existence of various patients and healthcare employees (Zabada et al., 1998, p. 58) with their own perceptions of quality. Despite the fact that healthcare as well as other service industries provides services for customers, it could be seen as specific cases of service industries. One of the reasons is that quality of healthcare services is obviously essential part of the healthcare industry as it directly deals with human health and bears responsibility for their lives. Presented point of view is supported by the statement of Berwick et al. (1990, cited in Natarajan, 2006, p. 573) that cost of poor quality is significantly higher within the healthcare industry.

Another reason could be argued to be complexity of healthcare service owing to a sophisticated nature of the healthcare industry. It reflects not only by existence of various patients with their own perceptions of healthcare service quality but also in patients’ involvement into curing process and their influence on care quality outcome.
It means that outcome of healthcare service depends not only on healthcare service providers but also on patients’ cooperation and their compliance to treatments. Besides this within healthcare organizations there are different subcategories of employees which affect healthcare service quality and have their own perception of it (Zabada et al., 1998, p. 58). Taking into account listed facts we could suggest that it could be challenging to track one common perception of healthcare service quality as well as in the case with general service quality.

Discovered the significance of healthcare service quality and its complex nature, it is obvious, that in order to achieve customer’s satisfaction in terms of quality, it should be managed efficiently within organization. Nowadays, a lot of approaches and initiatives available for managing, controlling and improving quality exist in business practice. For example, Total Quality Management [TQM], Lean Production [Lean] and Six Sigma are the most influential and well-established initiatives (Dahlgaard & Dahlgaard-Park, 2006, p. 263; Black & Revere, 2006, p. 2006; Kollberg & Dahlgaard, 2007, p. 7). These concepts evolved from quality control and quality assurance activities into integrative management systems and finally moved from manufacturing into service industries (Yong & Wilkinson, 2002, p. 108 - 114). However, it has been discovered that implementation of these quality management models within the service industry was carried out with some limitations (Yasin et al., 2004). According to various conducted studies (Beamount et al., 1997; Chakrabarty & Tan, 2007; Åhlström, 2004, pp. 560-561) it was revealed that while applying TQM within service companies not all quality tools are utilized comparing to manufacturing firms; Six Sigma and Lean faced several complications in terms of specification of the service industry. Therefore, three quality concepts should be adjusted to be successfully deployed in the service industry as well.

The healthcare is one of the service industry representatives that have been trying to implement listed three manufacturing quality management initiatives (Natarajan, 2006, p. 573, 577; Kollberg & Dahlgaard, 2007, p. 11). However within several studies it was revealed that applications of these quality management initiatives encountered some problems and did not provide considerable quality improvement (Lim & Tang, 2000, pp. 103-104; Joosten et al., 2009, p. 341; Taner et al., 2007, p. 333). These facts could indicate that healthcare organizations applied quality management models inefficiently. One issue that could have provoked inability to apply quality management models efficiently could be doubts about quality definition and its measurement that were expressed by healthcare administrators and healthcare service providers (Natarajan, 2006, p. 573). An absence of one common definition of quality is a feature that relates to complexity of the healthcare service industry that could create difficulties for using TQM, Lean and Six Sigma as they all need common value definition for their efficient functioning (Andersson et al., 2006, p. 286; Young & McClean, 2009, pp. 309-310; Sehwail & DeYong, 2003, p. 1). Another possible issue of unsuccessful application of quality management model could relate to initial development of these quality management initiatives for the manufacturing industry.

Regarding issues that TQM, Lean and Six Sigma were developed for products-producing companies and there is a distinction between quality of services and products, quality management initiatives should be adjusted for implementations within service-providing organizations. Furthermore its adjustment should be made on the level of each specific sector of the service industry as various services could differ from each other owing to the nature of the services and types and degree of the interaction between
the organization and its customers (Storey & Hull, 2010, p. 140). Also prior to implementing these models quality and its aspects should be studied from different perspectives in order to improve understanding of the quality and in its turn manage it more effectively within these models. Therefore TQM, Lean and Six Sigma should be tailored to a healthcare organization in terms of its distinct features as well as quality definition should be elaborated for these models in order to achieve high level of customer satisfaction regarding quality.

1.2. Problem discussion

In order to reveal a reasonable knowledge gap for our study we will start from discussion of reasons for an absence of one common definition of quality within both cases, namely general service industry and healthcare industry and what should be done with it. Afterwards we will proceed to issues of quality management in the healthcare. Quality management initiatives such as TQM, Lean and Six Sigma will be reviewed. It will be presented how these quality management initiatives could benefit from one common definition of quality and also how they could be used in order to manage quality efficiently.

We believe that a practice of usage of TQM, Lean and Six Sigma models in the context of the healthcare presents an interesting scope of an inquiry as an application of these three quality management initiatives is a rather challenging task while it could bring fruitful results. All three models have been already utilized within the healthcare industry (Talib et al., 2011, p. 233; Proudlove et al., 2008, p. 27; Natarajan, 2006, p. 577) and showed some positive outcomes as well as some shortcomings and problems. Thus, according to Klein, Motwani and Cole (1998, cited in Talib et al., 2011, p. 233) utilization of TQM within healthcare organizations could assist in shifting to customer oriented quality improvement system through a framework of customer focus, process management, new tools and teamwork (Talib et al., 2011, p. 233). Lean also was reported gaining more popularity in healthcare (Proudlove et al., 2008, p. 27). For example in Seattle by applying Lean at Virginia Mason Medical Center, the hospital “saved $6 million in planned capital investment, cut inventory costs by $360,000, reduced staff walking by 34 miles a day, improved patient satisfaction” (Natarajan, 2006, p. 576). The implementation of Six Sigma indicated some achievements, for example the Department of Veterans Affairs in one hospital had cut overall hospital medication error rates by 70 percent through adopting hand-held wireless computer technology and barcoding (Natarajan, 2006, p. 577).

However, together with examples of successful stories, utilization of TQM, Lean and Six Sigma has faced some problems and did not lead organizations to considerable quality improvements within the healthcare industry as it was mentioned before. So, some healthcare organizations failed in efficient management of healthcare service quality. It could be supposed that reasons for this could have been the complexity of the healthcare systems, an absence of one common definition of quality due to existence of various participants of healthcare service and others. In order to be able efficiently manage quality by means of TQM, Lean and Six Sigma, healthcare organizations need to successfully adopt these quality management initiatives to specification of the healthcare industry. One step of adaptation could be perceived as defining healthcare service quality because it is essential to know what should be managed and controlled.
Concerning that the healthcare industry relates and shares some common features (e.g. providing service for customers’ consumption) with the service industry, general service quality should be studied before going into examining healthcare service quality. As it was discussed earlier, service quality is complex and does not have one common definition. One of the reasons of service quality complexity relates to inseparability. It means that a service arises during an interaction between clients and service providers (Parasuraman et al., 1985, p. 42). Thus, it could be traced that there are two main parties, namely customers and employees or service providers within the service industry. Existence of two distinctive parties within the service industry could be a cause of an absence of one single perception of service quality as both of them have their own subjective perception of service quality. Moreover, the fact that there is no common definition of quality itself that was proved by several conducted studies (Gill, 2009, p. 533; Budyansky, 2009, pp. 921-922), makes possibility to draw one common definition of service quality even more challenging. To our mind such diverse approach toward service quality definition could create difficulties in terms of achieving or maintaining service quality within organizations.

In spite of a non-existence of one perception of service quality, quite a few definitions emphasize an importance of customers’ points of view. Thus, within the SERVQUAL model service quality is presented as “difference between perception and expectations of customers and actually delivered services” (Gupta et al., 2005, p. 392). According to Reeves and Bednar (1994, cited in Yoo & Park, 2007, p. 912), service quality was defined as “excellence, value, conformance to specifications, and meeting/exceeding expectations”. Also according to Zeithaml et al. (1990, cited in Yoo & Park, 2007, p. 912) quality was perceived as “discrepancy between the customers’ expectations and their perceptions”. Another definition expressed quality as “sub-dimensions such as reliability and responsiveness that precede customer satisfaction” (Yoo & Park, 2007, p. 912). As a result of various researches service quality mainly relates to customers’ satisfaction and companies’ perception of customers’ expectations about services.

As it was discussed before, it is even more difficult to reveal one common definition of quality in the healthcare as there is a great deal of parties involved in providing healthcare services (Zabada et al., 1998, p. 58). Within the healthcare as well as within other service industries numerous parties could be generally summarized in two types, namely customers and service providers. However in the case of the healthcare composition of service providers is quite complex as there are two types of them. The first type is physicians who provide medical treatment and the second type could be named “staff” who provides supplementary services (Chilgren, 2008). Representatives of these subcultures could have their own definitions of errors and quality of service in the healthcare (Zabada et al., 1998, p. 58). Another characteristic of the healthcare industry similar to other service industries is an emphasis on patients’ perception of quality. Several studies investigated that doctors and nurses associated healthcare service quality with patients’ satisfaction, interpersonal aspects of care, good medical expertise and time with patients (Hudelson et al., 2008, p. 35). According to Ramachandran and Cram (2005, cited in Badri et al., 2008, p. 160) high quality of healthcare could be achieved by meeting patients’ needs. Hence, patients’ needs and satisfaction could be highlighted as the crucial element for achieving quality in healthcare.
Indeed, customer is the one who decides whether service is of high or low quality. However in healthcare there are some difficulties that could prevent patients from comprehensive perception of quality, particularly limited knowledge in technical side of medical procedures, diagnosis, treatment etc. (Zabada et al., 1998, p. 58). At the same time, the quality of delivered healthcare service considerably depends on the cooperation and the compliance of patients themselves (Natarajan, 2006, p. 578). So, a lack of knowledge and a lack of active involvement of patients in the process of delivering service make it difficult for customers to measure quality. Hereby, it could be supposed that health service providers’ perception could supplement the overall perception of healthcare service quality while patients’ perception of healthcare service quality should be a focal point. Taking into account subjective nature of human’s perception of service quality, we could state that there could be difficult to find one common understanding of healthcare service quality between health service providers and patients.

Therefore we suppose that it is vital to consider perception of healthcare service quality of both parties, in order to deliver services that customers are expected to receive. This idea is supported by findings from the study of Hudelson et al. (2008, p. 33). It was investigated that both doctors and nurses stressed a subjective nature of healthcare quality. It was stressed that high quality could be achieved only by satisfying both patients and practitioners as healthcare service quality assessment depended on both parties’ points of view. The reason for incorporating healthcare service providers’ perception, namely perception of physicians is that physicians’ resistance of a quality management initiative could be rather significant drawback for the efficient initiative functioning owing to their central role in the healthcare decision making process. This fact was detected within the example of TQM initiative (Blumenthal, 1993, p. 2775) but could be a threat for Lean and Six Sigma in terms of healthcare personnel as well (Joosten et al., 2009, p. 345; Taner et al., 2007, p. 333). So, involving providers’ perception about healthcare service quality in the quality management program could motivate physicians to accept this quality management approach.

Concerning the idea of taking into account both patients’ and healthcare service providers’ perceptions, it could be carried out in two ways. First way is that two types of perceptions could be aligned in order to get one common definition of healthcare service quality. And the second way is to combine two types of perception if they turn out to be contradictory.

An aligned or combined perception of healthcare service quality could assist in terms of efficient management of quality within the healthcare, namely in a case of utilizing such quality management initiatives as TQM, Lean and Six Sigma because healthcare organizations will be aware about what is quality from various perspectives and will know what should be managed and controlled. For example, the meaning of quality provided by TQM is changing under different perspectives, namely patients’ and service providers’ (Zabada et al., 1998, p. 58). These perspectives could be rather conflicting as two parties have different interests and goals. So, two perspectives should be matched and adapted to each other in order to manage quality improvement process successfully. Regarding Lean the common understanding of value among parties should be elaborated for gaining better results, better customer experience and efficiency gains (Young & McLean, 2009, pp. 309-310). Six Sigma also stresses the importance of examining quality through customers’ (in our case patients and service providers)
perspective in order to focus on the most important and measurable aspects of quality (Sehwail & DeYong, 2003, p. 1).

Scrutinizing TQM, Lean and Six Sigma, it could be noticed that these approaches are not ideal and possess its own shortcomings. Thus, the TQM drawback is that it takes time and significant efforts to bring some significant results as unique organizational structure and culture within a healthcare organization should be adapted to TQM principles (Yasin et al., 1998, p. 64). The main shortcoming of Six Sigma approach is the lack of emphasis on the soft/people factors (Proudlove et al., 2008, p. 32), while it was discussed to be a crucial aspect for achieving service quality. The soft side of Lean was supported by some researchers and skeptically evaluated by others at the same time (Proudlove et al., 2008, p. 32). The British researchers argued that Lean could be successfully applied for eliminating delays, repeated encounters, errors and inappropriate procedures in healthcare. But its challenge consists in identifying customers within stakeholders (Kollberg & Dahlgaard, 2007, p. 11). Making a comparison of presented drawbacks, it could be noticed that shortcomings of one initiative could be reduced or eliminated by others and vice versa. Therefore its notion could be suggested to be a prerequisite for combining TQM, Lean and Six Sigma.

Moreover comparing other aspects of TQM, Lean and Six Sigma, additional prerequisites for their combination could be detected. For instance, Lean approach is aimed to detect non-value-adding parts in the process flow of material and information while Six Sigma is directed to improve value-adding parts of processes (Psychogios et al., 2012, p. 124). Indeed, combination of Lean and Six Sigma is a widely explored issue in the literature and empirical studies were conducted within different researches arguing about their ability to bring effect of synergy (Mangelsdorf, 1999, p. 424; Furterer & Elshennawy, 2005, p. 1179). Considering relation of TQM to Six Sigma approaches, Six Sigma could be seen as evolution of TQM that has integrated some other tools and methodologies (Dedhia, 2005, p. 569). Therefore, Six Sigma could be seen as a broader version of TQM in terms of its advanced methods and tools. Hence, we believe there is possibility to achieve the effect of synergism by combining some of the most beneficial approaches and tools from TQM, Lean and Six Sigma in terms of the healthcare.

Deeper insight into listed quality management models reveals that a combination of these approaches could present an opportunity for healthcare organizations to manage quality effectively due to several reasons. Lean and Six Sigma initiatives are mainly aimed at improving quality by eliminating wastes and reducing variability. Also, they are touching not only quality but such aspects of business as cost and life-cycle time (Furterer & Elshennawy, 2005, p. 1179). At the same time TQM approach brings all its efforts of improving quality in systematic way disregarding other issues (costs, productivity, financial results etc.). Hereby, TQM will help in being focused on quality through its values placed at the first place while Lean and Six Sigma will provide effective methodologies, tools and measures.

However, even if there are some prerequisites for a successful combination of quality management initiatives, there is still could be found a space for discussion if it is the most beneficial way. One issue that could arise regardless a successful combination of TQM, Lean and Six Sigma is an implementation. The evidences of organizations’ failures of implementing these approaches are well documented (Andersson et al., 2006,
It was detected that attention should be directed to an implementation of Lean and Six Sigma rather than on concepts themselves (Proudlove et al., 2008, p. 33). The failures of TQM implementation were discussed as well. It was pointed that approximately only one-third of the TQM programs in the US and Europe managed to improve productivity, competitiveness or financial result at significant scope (Andersson et al., 2006, p. 285).

One of the reasons of complications on an implementation stage could be intention to incorporate too many dimensions of quality improvement at the same time. Addressing this problem within our research paper, we would focus on combining only the most critical techniques from TQM, Lean and Six Sigma that would help to improve the most vital quality dimensions. These dimensions will be selected on the bases of an aligned or combined perception of the healthcare service quality. We believe that utilization of such integrated quality model that employs only some initial tools would bring better results than trying to embrace all issues at the same time. Moreover it could assist in successful implementation of quality management initiatives which in its turn could be a question for further studies.

Summing up previously conducted discussion, it could be concluded that in order to achieve efficient quality management in the healthcare a combination of TQM, Lean and Six Sigma should be adapted to the industry through a common quality perception. In its turn common quality perception should anticipate both patients’ and healthcare service providers’ perspectives on healthcare service quality. Hence, in order to embrace two evoked problems we defined two research questions:

1. What is an aligned or combined perception of service quality in terms of health service providers and patients?
2. Considering the defined aligned perception of service quality what techniques and tools from TQM, Lean and Six Sigma are the most essential for combining into one model in order to achieve this service quality definition?

1.3. Thesis purpose

The main purpose of this paper is to propose a basic approach for a quality management model for the healthcare by integrating the most appropriate values, methodologies and tools from TQM, Lean and Six Sigma for efficient quality management. The selection of quality management models’ elements will be based on an aligned or combined perception of service quality in terms of health service providers and patients. So, we could state that our sub purpose is to develop a service quality perception for the healthcare. Such approach is aimed to direct a model to achieve a defined aligned or combined perception of service quality by improving only the most relative quality dimensions without diffusing healthcare organizations’ competences on irrelevant. Moreover focusing on achieving the mutual service quality perception by utilizing only the most appropriate quality management models’ ingredients could be an efficient approach toward quality management not only within the healthcare but in the overall service industry as aspect of inseparability is related to the whole service industry. Hereby, expected research findings will contribute to Quality Management discipline and research in Service Quality field by suggesting an approach toward utilizing quality management initiatives on the bases of derived an aligned or combined perception of service quality among all interested parties.
Within the practical area, our study could assist healthcare and other types of service providing organizations in structuring their approaches toward service quality management by initially aligning or combining perception of service quality among the most important parties and afterwards addressing particularly these issues within quality management initiatives which were pointed out by selected parties. Such approach could help companies to embrace the most essential quality cases in their specific context.

We would like to state that an approach that will be proposed within the study will not be linked to a specific context (i.e. country, organization etc.) as we are intending to present a way of how it should be carried out. However in real practice an approach of developing of a combined quality management model should be applied relative to one single organization with all its specific characteristics in order to bring fruitful benefits.

1.4. Research structure

In order to initiate the process of answering the research questions we will conduct literature review of the main issues that are touched upon in our main research idea. Hereby, we are intending to study precisely general service quality and service quality relative to the healthcare, specific characteristics of the healthcare industry, main concepts of quality management initiatives and their specification in terms of the healthcare.

![Figure 1. Framework of the research process.](image)
The figure 1 depicts the framework of our research process by showing all steps including steps for the research design.

First of all, in order to answer the first research question, we will conduct the literature review number one “Healthcare service quality”. Within it we will examine a focus of service quality and more deeply try to understand its categories and dimensions. Afterwards specific characteristics of healthcare services as well as healthcare service quality categories and dimensions will be scrutinized. For example, it could be specific involvement of health service providers and patients in a process of quality creating. Combining outcomes from the analysis of specific characteristics of healthcare services and a focus of service quality in the healthcare, we will try to identify several possible critical service quality aspects that could exist among health service providers and patients and highlight main dimensions of that quality.

Next step is to conduct an empirical study in order to define one aligned or combined perception of service quality and quality dimensions that are incorporated in it. Prior to proceeding to the empirical study, methodology adopted throughout the study will be elaborated. Afterward, the empirical study will be implemented. It will be conducted in two ways, namely running interviews with two types of respondents: patients and health service providers. Collected and analyzed data will lead us to the discussion that will result in constructing an aligned or combined perception of healthcare service quality. Hence it will be an answer to our first research question.

Then we will move to carrying out a review of the second literature. Its content will include Quality Management initiatives, namely TQM, Lean and Six Sigma approaches. We will look at listed quality management initiatives from three perspectives. First we will consider their main concepts and techniques from the original view. Then we will present their applicability within the overall service industry as well as within the healthcare industry. Also we will take into account their similarities and differences in order to be able to argue about possibility to combine these quality approaches. The comparison will be conducted on the bases of original approaches. The result from this analysis should be a list of values, concepts, techniques which could be beneficial in terms of the healthcare service quality improvement.

Considering the answer on the first research question, namely an aligned or combined perception of service quality in terms of health service providers and patients and an outcome of the three quality management initiatives’ review, we expect to be able to select only those concepts and techniques that could help to achieve a defined quality perception efficiently. Consequently this step will provide opportunity to create a combined quality model for a case of specific perception of service quality in healthcare organizations. Described parts of the paper and its structure could be perceived as steps of an approach toward constructing a combined quality management model.

In order to support our decision to divide the literature review in two parts, we argue that the main cause for it was two research questions and the empirical study that related only to the first research question. We supposed that it would be more logical to conduct research and analyses of the first research question and then bearing in mind outcomes from the first part to proceed to the research and discussion of the second research question. Selected structure assisted us in implementing the research in a more efficient way as we were open for changes in terms of conducting the second literature.
review. It means that we conducted the second literature review after the empirical study as the results from the latter could have affected the structure and content of the literature review about quality management models to some extent.

Moreover our structure could be convenient for readers. They could first concentrate on the first problem and do not keep in mind issues in terms of the second problem. Such approach could help not to overload readers with various different concepts and create better flow of understanding of raised problems and conducted analysis.

1.5. Limitations

Though we were able to reach our research purpose, we could highlight the following constraints within the conducted research:

1. Access to information. Due to various reasons such as old date of publication, some initial sources were not available for a usage. Herely, we utilized information presented through secondary sources. It could influence our study to some extant as we were not aware of possible important aspects presented within initial sources.

2. Access to respondents. Due to heavy workload of healthcare organizations, healthcare service providers did not represent all sub-cultures of healthcare organizations within our study. The sample was missing receptionists, managers and involved only one nurse. Hence such composition of healthcare service providers did not allow us to investigate thoroughly comprehensive perception of healthcare service quality. Also owing to limit access to patients with different occupations, students are prevailing within our sample. It could also restrict our aligned and combined healthcare service quality perception.

3. Within the study categories, dimensions and sub-dimensions of healthcare as well as general service quality were determined on the bases of obtained literature. Owing to the fact that there are numerous amounts of approaches toward service quality concepts, if we considered categorizations of other authors (accessible for us), we could have received different list of categories and dimensions. Thus, we could have received different composition of the aligned and combined healthcare service quality perception and consequently it would have influenced the combined quality management model composition.

4. Due to our limit knowledge in complex statistical tools and their implications as well as nonattachment to specific organizational case, composition of the combined quality management model involves only basic methodologies and tool. It could constrain efficiency of the model for improving quality aspects from the aligned and combined healthcare quality perception.
2. The First Literature review: Healthcare service quality

The aim of the first literature review is an exploration of healthcare service quality categories and dimensions in terms of patients and health service providers within the existing literature. Healthcare service quality dimensions that will be discovered within this chapter will be further utilized for our empirical study in order to construct an aligned or combined perception of healthcare service quality.

In order to be able to develop a list of healthcare service quality categories and dimensions in terms of patients and health service providers and understand why these categories and dimensions are essential in this particular context, we need to study specific features of Service Quality in the healthcare industry. Before going into examining of literature of healthcare service quality, it is important to understand specification of quality in services as it was stated before quality in services differ from product quality to some extent. Hereby, first we will discuss specific characteristics of service quality.

2.1. Service Quality

The core idea of Service Quality literature review is to get understanding of the nature of Services Quality and to study its possible categories and dimensions.

Starting from 1980s a new business trend toward service quality was initiated. As customers became more informed and demanding, companies realized that product quality was not a single key for a competitive advantage and should be combined with service quality (Gupta et al., 2005, p. 390).

In order to get better understanding of service quality, it is vital to acquire knowledge about the nature of a service itself. Services could be described by three specific characteristics, namely intangibility, heterogeneity, and inseparability that were suggested by Parasuraman et al. (1985, p. 42). Intangibility of services consists in inability to measure value of it before sales occur comparing to products. Heterogeneity is expressed in the way that quality of a service delivery could vary from one day to another. Such deviations could exist due to various factors such as mood of service providers and customers, difficulties in copying the same way of delivering services and other factors. It should be noted that properties and quality of products stay invariable within a prescribed product life. The third characteristic of services, inseparability, stands for a feature that services emerge during an interaction between clients and frontline employees (Parasuraman et al., 1985, p. 42). The latter characteristic could also relate to the simultaneous production-delivery-consumption element of services (Harvey, 1998 cited in Yoo & Park, 2007, p. 911). On the other hand quality of products does not depend on the mentioned type of interactions. Taking into account listed characteristic of services, we could conclude that services are rather complex comparing to products and they embrace considerable amount of subjective issues. Consequently, if the nature of services was defined as complex then service quality could be identified as complex, respectively.

Besides mentioned specific features of services, another reason that could support the complexity of service quality relates to its multidimensionality. Grönroos (1984, pp. 38-
suggested that service quality consisted of two dimensions, namely *technical* and *functional*. Technical side concerns issues of what is provided and functional side relates to aspects of how the service is delivered. Later other authors supported the Grönroos’s idea about multidimensionality of service quality by depicting other various dimensions of it. The great deal of developed lists of service quality dimensions involved the same technical and functional side of service quality but their titles could deviate from one author to another. So, such researchers as McDougall and Levesque (1994, cited in Dagger et al., 2007, p. 125), Oliver (1994, cited in Dagger et al., 2007, p. 125) and Brandy and Cronin (2001, p. 44) listed a dimension of *outcome of the service* that could be related to technical aspect of Grönroos’s classification. Also they mentioned such dimensions as *process of services delivering* and *interpersonal dimension* that correspond to Grönroos’s functional side of service quality (Dagger et al., 2007, p. 125; Brandy and Cronin, 2001, p. 44). Additionally to two initial service quality dimensions, McDougall and Levesque (1994, cited in Dagger et al., 2007, p. 125), Oliver (1994, cited in Dagger et al., 2007, p. 125) and Brandy and Cronin (2001, p. 44) stated surrounding *environment* of service quality. Moreover besides environmental dimension McDougall and Levesque (1994, cited in Dagger et al., 2007, p. 125) supplemented their list of service quality dimensions by *enabling* aspect. The latter dimension reflects factors that make services easier for customers’ consumption.

According to Dagger et al. (2007, p. 125) there was the summary of discussed dimensions which included such aspects as *technical*, *interpersonal*, *environmental* and *administrative* aspects (see Table 1). Technical aspect involves service outcomes dimension. Interpersonal aspect refers to functional and process dimensions. Environmental approach was presented with similar description by all presented authors and administrative aspect relates to enabling dimension. But we cannot purely perceive the provided list of dimensions as the summary because some of the categorizations have been proposed on the bases of other researchers’ models. So, Brandy and Cronin’s categorization was an empirical support of categories suggested by Rust and Oliver (1994, cited in Brandy & Cronin, 2001, p. 44) and also incorporated the Grönroos’s idea (Brandy & Cronin, 2001, p. 44). However the purpose of the current section is not to reveal if various researchers discovered new service quality dimensions but to study what dimensions exist overall within the literature. So, for the purpose of our research the summary proposed by Dagger et al. (2007, p. 135) is rather useful as it grasped all presented dimensions and gave umbrella titles for all of them. Moreover the fact which relates to the correlation between some of reviewed categorizations confirmed that namely technical, interpersonal and environmental dimensions could be seen as the most important, alternatively these researchers could have revealed some other dimensions. Further within our study we will call listed four dimensions as categories of Service Quality in order to depict that they are quality aspects of high level. We should note that the review of categories suggested by researchers from Dagger et al. (2007, p. 135) summary was conducted on the basis of not all primary sources. So, there could be other conclusions if we have utilized only primary sources of presented authors. But we believe that deviations of conclusions would not have been very dramatic as we suppose that differences could have been description of dimensions but not in their conceptual nature.
Regarding an issue of a multidimensional nature of service quality, it is reasonable to observe SERVQUAL model that is one of the most widely used measurement of service quality. SERVQUAL model was proposed by Parasuraman (1985) and involved five sub-dimensions of service quality such as reliability, tangibles, responsiveness, assurance, and empathy (Yoo & Park, 2007, p. 911). Comparing listed earlier three characteristics of service quality (e.g. intangibility, heterogeneity, and inseparability), we could notice that five sub-dimensions could assist in overcoming difficulties associated with the service nature. Miranda et al. (2010, p. 2139) stated that proposed by Parasuraman five sub-dimensions of service quality could fit to all service-providing organizations in general. Reverting to SERVQUAL sub-dimensions, it is important to understand meaning of each of them. Thus, tangible dimension is “physical facilities, equipment, and appearance of personnel”; “reliability is ability to perform the promised service dependably and accurately”; “responsiveness is willingness to help customers and provide prompt service”; “assurance is knowledge and courtesy of employees and their ability to inspire trust and confidence” and “empathy is caring, the individualized attention the firm provides to its customers” (Miranda et al., 2010, p. 2139).

Making comparison between five sub-dimension from SERVQUAL and four service quality categories summarized by Dagger et al. (2007, p. 125) (see Table 1), some interactions could be revealed between them (see Table 2). First of all, it could be argued that SERVQUAL sub-dimensions mainly relate to an interpersonal aspect as all of them involve some elements of interaction between customers and service providers. This fact is supported by Miranda et al. (2007, p. 2139) that SERVQUAL could be utilized for measuring functional rather than technical dimension of service quality.

However, two SERVQUAL sub-dimensions, namely tangible and responsiveness could be interconnected with technical and administrative categories of service quality, respectively. The similarity between tangible dimension and technical category is rather obvious while responsiveness could be linked to an administrative category if we define administrative tasks (i.e. SERVQUAL aspects) as willingness of administrative personal to help customers and to provide prompt service.
Table 2. Comparison of summarized categories of Service Quality and SERVQUAL model.

<table>
<thead>
<tr>
<th>Summary of Service Quality categories</th>
<th>SERVQUAL model</th>
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<tbody>
<tr>
<td></td>
<td>Tangible</td>
</tr>
<tr>
<td>Technical</td>
<td>✔</td>
</tr>
<tr>
<td>Interpersonal</td>
<td>✔</td>
</tr>
<tr>
<td>Environmental</td>
<td></td>
</tr>
<tr>
<td>Administrative</td>
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Our intention within this section was to select categories of Service Quality for further their implementation in Healthcare Service Quality literature review. Further in the first literature review we utilized selected categories of Service Quality for detecting similarities and differences between it and dimensions of healthcare service quality in order to reveal specific features of the latter.

Having examined sub-dimensions from SERVQUAL model, we came to opinion that if we considered only sub-dimensions of this model then it could limit our possible findings within Healthcare Service Quality studies as this model incorporate mostly interpersonal category comparing to the summary of Service Quality categories depicted in the Table 1. Hereby, within our study we used the summary of Service Quality categories proposed by Dagger et al. (2007, p. 125), as they could embrace a wider range of possible quality dimensions what could give opportunity to detect more specific features of Healthcare Service Quality.

Concerning approach toward SERVQUAL dimension, two types of them could be found within the literature. One was suggested within SERVQUAL model and it described SERVQUAL five aspects as sub-dimension itself (Parasuraman, 1985). And another approach was presented by Brandy and Cronin, it depicted five factors of SERVQUAL not as sub-dimensions but as evaluators for dimensions (Brandy & Cronin, 2001, p. 37). However for the purpose of our study, we could suggest using them as sub-categories within the summary of Service Quality categories but not as evaluators for categories. So, we decided to utilize the fist stance as SERVQUAL sub-dimensions that allow us to have a broader approach toward analyzing of categories comparing to a case if SERVQUAL sub-dimensions are adopted as just evaluators for rigid categories. Moreover if we applied the second approach a structure of general service and healthcare service quality categories would become even more complex as it would involve three levels such as categories, sub-categories and evaluators of the latter. It should be remarked that sub-categories of the second level will be titled as dimensions further within our research for the purpose of their representation.

Having acquired knowledge of service quality categories and dimensions, we could argue that it could be not enough for understanding what direction to select toward quality achievement. Studied categories and dimensions presented various sides of quality. Taking into consideration that within services there are different participants such as customers and service providers and all of them could constitute definition of quality, we cannot identify what categories and dimensions should be heighted for improving service quality. Hereby in order to be able to notice this direction and be able to define an aligned or combined perception of Healthcare service quality in terms of
health services providers’ and customers’ perceptions later as well, it is preferably to be aware what is quality in general services. As Health Service is obviously a type of services and could have some similarities with general services, then knowledge of quality in terms of the latter could assist us in discovering quality within the healthcare as well.

According to adjusted SERVQUAL model, it involves 22 pairs of items among which one half of them refers to customers’ expectations about a level of service and another half is measuring consumers’ perceptions of the level of service delivered by a company (Miranda et al., 2010, p. 2139). Hence, quality in terms of SERVQUAL is presented as a distinction between perception and expectations of customers and actually delivered services (Gupta et al., 2005, p. 392).

Considering other academic opinions about service quality, for instance Lee et al. (2006, p. 56) associated service quality with “ability to meet or exceed customer expectations”. Another approach toward definition of service quality deals with a service quality perception. This perception mainly relates to consumer’s judgment or impression about received services (Dagger et al., 2007, p. 124).

Therefore, it could be noticed that within presented ideas about service quality the main role is given to customers and their perception of service quality. In its turn, service quality perception is concerned with customers’ expectation and perception of received services. So, for the purpose of our research we will treat service quality with emphasis on customers.

In spite of our awareness that customers’ satisfaction could be achieved through eliminating gap between customers’ expectations and perception of actually delivered services, we do not consider this approach within our research as we are not intended to study purely customers’ perception of service quality. According to the research purpose, namely the first research question, we will take into consideration that high service quality could be achieved or improved by bearing in mind that customers’ perspective about quality should be treated as more central than healthcare service providers’ as services were created particularly for customers and providers deliver healthcare services in order to satisfy them.

### 2.2. Healthcare Service Quality

*Having discovered categories and dimensions and the focus of quality within Service Quality, we proceed to a discussion of Healthcare service quality. This section is aimed to discover a point of quality focus in terms of Health Service and study similarities and any differential characteristics of Healthcare service quality categories and its dimensions comparing to Service Quality. Within the section we will start from elaborating who should define service quality in the healthcare. Then various approaches toward elements of healthcare service quality that exist in the literature will be presented. Afterwards, on the bases of studied approaches we will construct list of healthcare service quality ingredients for applying within our study.*

Considering an issue of quality focus in Healthcare, there is no one common understanding concerning who plays the main role in identifying its quality. It could be argued that the main focus should be made on patients as customers because they could
leave “the consumption loop” while their presence in it is essential for a healthcare organization functioning (Owusu-Frimpong, 2010, p. 204). Also within the study of O’Connor et al. (1994, p. 32) patients’ perspectives were defined as “a meaningful indicator of health services quality” and could depict the most vital perspective.

Another notion on a quality focus in Healthcare was introduced by Sower et al. (2001, p. 50). They expressed that quality characteristics should be recognized mutually by patients and health service providers as both of them have “valuable insight” on features that create quality in hospitals. So, making comparison with customers-oriented focus in Service Quality, it is visible that Healthcare service quality focus is distinctive to some extent as some authors incorporate not only customers’ perception of quality but service providers’ perception as well.

Following inseparability feature and interpersonal aspect of service quality, within our research we would consider the mutual importance of patients’ and service providers’ opinions. Moreover, even if we understand that service is created for customers, high level quality cannot be achieved without service providers’ involvement in quality comprehension, as service providers are responsible for service delivering while process of service delivering creates impression on customers. Taking such mutual approach toward service quality will cause necessity to deal with a gap that is discrepancy between customers’ and service providers’ perception of service quality (Miranda et al., 2010, p. 2138). It should be remembered that healthcare services as well as general services are existing for customers’ satisfaction and even if healthcare service providers have their own essential opinion on healthcare service quality, they should always keep in mind that the core place is allocated to customers and direct their strengths to deliver their services in line with their expectations and needs as well as it is in general service industry (Scotti et al., 2007, p. 111). But we do not take into consideration this note within our research as we are interested in discovering patients’ and healthcare service providers’ perceptions of healthcare service quality independently. However this fact could be rather valuable in terms of developing quality management programs.

In order to be able to get a deeper knowledge about service quality within the Healthcare industry and be able to deal with the described gap, it is reasonable to take a look at healthcare service itself. First of all, it is obvious that Healthcare industry output is healthcare services, consequently it should incorporate features of the overall service quality. But does it prevail in reality or does quality in the Healthcare industry has specific characteristics? According Kenagy et al. (1999, p. 661) service in the healthcare relates to various characteristics that creates patients’ experience of care rather than “the technical quality of diagnostic and therapeutic procedures”. However, there are other different notions that take technical side of healthcare service quality as well.

Taking into consideration various conceptual frameworks of service quality in the healthcare, several of them could be identified (see Table 3). First of all, it was detected that all researchers of healthcare service quality examined within our study specified technical and functional or interpersonal categories of healthcare service quality as well as Grönroos and other representatives of general service quality (Donabedian, 1992, p. 247; Brook & Williams, 1975, p. 8; Dagger et al., 2007, p. 125; Zineldin, 2006, pp. 69-70, 87-88; Choi et al., 2005, p. 143; Doran & Smith, 2004, pp. 379-381). However some of researchers gave other titles to these categories or incorporated several categories under technical or functional. Thus, Brook & Williams (1975, p. 8) specified art-of-care
provided as “milieu, manner, and behavior of the provider in delivering care to and communicating with patients” that could be determined as functional aspect. Zineldin (2006, pp. 69-70, 79, 87-88) depicted two rather similar categories functional and interaction that could be combined under one functional category as interaction was described as “adequate explanations and instructions during and after hospital treatment” and “amount of time spent by physicians or nurses to understand the patient’s needs” etc. Moreover additionally to technical dimension, we could list Zineldin’s infrastructure dimension as it was presented mainly as “quality of the internal competence and skills, experience, know-how, technology” (Zineldin, 2006, p. 79). Choi et al. (2005, p. 143) discussed tangible dimension as equipments in hospitals so it concerns technical aspect. Also it could be argued that staff and physician concerns could incorporate features of functional aspect of quality with an emphasis on specific health care providers in each of the cases as staff concern touched nurses’ ability to explain medical process well, friendliness and helpfulness of healthcare service providers rather than physicians and physicians concern was related to physicians ability to explain treatment process, their politeness and so on (Choi et al., 2005, p. 143). Doran and Smith (2004, pp. 379-381) presented two categories outcome and tangible that could be referred to technical category because outcome was presented as the things which patients want to receive from healthcare service and tangible aspect was depicted as physical facilities, equipment, and appearance of various staff. Also they stressed empathy as caring and individualized attention to patients, assurance as staff ability to inspire trust, responsiveness as willingness to help patients and deliver responsive services, and reliability as consistency and dependability of healthcare services (Doran & Smith, 2004, pp. 379-381). So, all four dimensions could be identified as functional aspect.

Besides technical and functional healthcare service quality categories, most of reviewed researchers outlined environmental and administrative categories. Concerning these categories Ware et al. (1983, cited in Dagger et al., 2007, p. 125) listed them within their developed categories. Proposed by Donabedian (1992, p. 247) the amenities of care could be defined as environmental category as it was related to circumstances under which technical tasks and interpersonal exchanges occurs. Zineldin (2006, p. 82) has category such as atmosphere that could be related to environmental category because it was defined as a specific environment where patients and healthcare service providers interact. Choi et al. (2005, p. 143) mentioned convenience of care process that could be related to administrative category as it was described as waiting time for medical examinations, quick and simple payment procedure also their tangible dimension could be categorized as environmental aspect as they referred it to pleasantness of medication areas and doctors’ offices. Category of interaction introduced by Zineldin (2006, p. 79) could be seen not only as functional but also as administrative category owing to the fact that it was explained as information exchange or various explanation during hospital visiting, financial exchange. Doran and Smith’s (2004, p. 380) category of responsiveness that was earlier reported to be close to interpersonal aspect could be categorized as administrative as well. It could be done due to researchers’ explanation where responsiveness was described as “willingness of the service to help patients and provide a responsive service” without specification on type of help. Therefore, this help could consist in providing some administrative assistance too.
### Table 3. Healthcare service quality categorizations.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Authors of Healthcare service quality categorizations</th>
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<tbody>
<tr>
<td>technical</td>
<td>technical</td>
</tr>
<tr>
<td>interpersonal</td>
<td>art-of-care</td>
</tr>
<tr>
<td>the amenities of care</td>
<td>environmental</td>
</tr>
<tr>
<td>administrative</td>
<td>interaction*</td>
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Note: (*) the same category.

Hereby summarizing scrutinized healthcare service quality dimensions, all of them could be categorized into the following aspects, particularly technical, interpersonal, environmental and administrative and additionally two categories physician and staff concerns could be added (see Table 3). Comparing listed aspects to aspects within service quality, we could notice that they are mainly the same. Hence we could argue that there are rather reasonable similarities between service quality and healthcare service quality in terms of main quality categories. However, this similarity could exist due to the fact that some categories of healthcare presented in the table 3 are adopted from general service quality literature. So, categories suggested by Zineldin (2006, p. 69) are quality dimensions from the 5Qs model developed by him and this model is an expanded version of SERVQUAL and technical-functional models of service quality. But it was stated that the 5Qs model could be usefully utilized with healthcare sector (Zineldin, 2006, p. 87). Also categories presented by Doran and Smith (2004, p. 379) are parts of the P-C-P model which they adopted for the healthcare sector. Initially the P-C-P model or the Pivotal-Core-Peripheral model was developed by Philip and Hazlett (1997) and it was based on back-drops of SERVQUAL model. Philip and Hazlett (1997, pp. 281-282) suggested that their model could be applied to any service sector. But our purpose is not to reveal categories of service quality that was developed specifically and only for the healthcare. Moreover the fact that categories of quality from general service were adopted in the healthcare industry could support the idea that there are a lot of similarities between them. However we should notice that when it comes to constructing dimensions of categories, healthcare industry as well as other types of service will have their own quality dimensions reflecting their services specifications.
In spite of service quality categories are repeated in healthcare service quality categories, we could notice that the list of service quality categories is supplemented by two additional concerns, namely physician and staff. Representatives of the latter are other medical staff rather than physicians such as nurses, receptionist and others (Choi et al., 2005, p. 140). Existence of two distinctive representatives of health service providers is a specific characteristic of the healthcare industry.

Also the aspect of existence of various types of health service providers was discussed by Miranda et al. (2010, p. 2140). They suggested adjusting SERVQUAL to the healthcare industry by recognizing two types of employees, namely health staff and non-health staff. The outcome of the research made by Miranda et al. (2010, p. 2143) was HEALTHQUAL model that involved four factors. These factors were described as (1) health staff (studied and practiced “craft” skills of health staff; communication, attention to patients’ problems, interest in solving patients’ problems, professionalism, and understanding patients’ problems); (2) efficiency measures (level of bureaucracy, waiting times in the health centre before entering the consulting room, speed of complementary tests, complaints resolution, time to focus on each patient, the health centre’s timetable); (3) non-health staff (studied and practiced “craft” skills of non-health staff; professionalism, kindness and politeness, attention to patients’ problems, interest in solving patients’ problems); (4) facilities (cleanliness of facilities, equipment at the centre, and location of the centre). Comparing the division of physicians and staff suggested by Choi et al. (2005, p. 140) and the division of health staff and non-health staff proposed by Miranda et al. (2010, p. 2143), we could find some inconsistence. In the first case nurses were presented as staff other than physicians and in the second case there is health staff which could be argued to involve both nurses and physicians. For the purpose of our study we are indenting just to separate physicians from other representatives of healthcare providers. Putting nurses in the same category with administrative staff is just a way of categorizations. However within the empirical study questions for interviews were designed in order to reveal patients perception of quality in terms of three type of healthcare personal separately, namely physician, nurses and administrative staff (e.g. receptionists).

Bringing into comparison the summary of healthcare service quality categories and the HEALTHQUAL model, we came to a conclusion that the latter model is incorporated into the summarized categories. So, it as well as SERVQUAL model could be utilized for developing dimensions. Therefore, within our research we will be using the summarized categories of healthcare service quality as the high level for the depicting purpose.

For the purpose of a further discussion of patients’ and health service providers’ perception of healthcare service quality, we will combine the summarized list of health service categories and quality dimensions from SERVQUAL and HEALTHQUAL models in order to develop a list of quality categories together with quality dimensions. This list will be utilized for analyzing patients’ and health service providers’ points of views within our empirical study.

In order to receive an effectively developed list of health quality dimensions, we will involve additionally to SERVQUAL and HEALTHQUAL models, the summary of health quality dimensions constructed by Sofaer and Firminger (2005, pp. 521-534). Their summery consists of 11 studies which have not been reviewed before in our
research paper. This step will help us to detect health quality dimensions that have not been indicated in previous summaries and models.

So, Sofaer and Firminger (2005, p. 521) summary displays seven dimensions. They are:
1. patient-centered care;
2. access;
3. communication and information;
4. courtesy and emotional support;
5. technical quality;
6. efficiency of care/organization;
7. structure and facilities.

For the purpose of constructing a list of healthcare service quality dimension, a content of each of seven listed dimensions should be reviewed. We did it for identifying to what category each dimension could be attributed.

The first dimension, Patient-centered care, relates to individualized care, patients involvement in their care and decision-making about their care, doctors, nurses, and staff having personalized knowledge of patients etc. Access dimension stands for having available and accessible doctors, nurses, and staff, affordable care, convenient places and times for visits; having providers who make home visits, access to urgent care, assisting staff in navigating the health system etc. Communication and information and technical quality are the same dimension as in previously discussed categorizations. Courtesy and emotional support could be perceived as a part of communication dimension but is more concerned on building feelings of emotional security and trust in caregivers which could assist in reducing feelings of vulnerability and anxiety among patients. Efficiency of care/organization is described as accurate billing, efficient referral processes, short waiting times for appointments and at ancillary settings etc. Structure and facilities was mentioned within the main categories and incorporate, for instance, such issues as “available parking, safety and security in and around the facility, cleanliness and comfort, quality of food provided, a quiet and pleasant environment, a variety of clinical services available, use of up-to-date technology such as computers, and the visibility of the care provider in the community” (Sofaer & Firminger, 2005, p. 534).

Hereby, it is obvious that most of the dimensions were presented in previously examined studies. However, there could be pointed such dimension as access that was not mentioned before separately and there are good practical examples of discussed which could be utilized for constructing empirical study later.

**Developing of Healthcare service quality categories and dimensions list**

So, within our research the main categories of health quality service are technical, functional, environmental and administrative as they grasp all presented in our literature review concerns. Also as two additional concerns, namely physician and staff, were highlighted, we would reflect upon them within presented four categorize if any important arguments would be revealed in favor of them among patients or health service providers. However, we decided not to point out physician and staff as separate categories as their dimensions could be comprised into listed main categories.
Taking into consideration all described health quality categories and dimensions, we structured the following list that is depicted within the Table 4. Prior going into discussion of the list, it should be pointed that our categorizations cannot be perceived as a universal and applicable for the whole healthcare industry due to several limitations. Firstly, the construction of the list was based on our qualitative perception of possible connections between healthcare service quality categories. Secondly, the content of our list of healthcare service quality categories and dimensions was not tested by an empirically study. Hence, we could suppose that there could be a specific list of quality categories and dimensions in each case of a specific healthcare organization owing to complexity of these systems.

Having analyzed various categories and dimensions presented by different authors and models in terms of general service and healthcare service quality, we selected four umbrella categories for healthcare service quality. They are:

1. technical category;
2. functional category;
3. environmental category;
4. administrative category.

In order to acquire more precise understanding what issues are incorporated by four categories we selected healthcare service quality dimensions for each of the listed categories. First, technical category involves three quality dimensions:

1. tangible quality that represents such quality aspects as physical facilities, namely equipments;
2. health service outcome. It refers to a result of curing;
3. professional skills of health service providers. This category could be studied from two sides, namely in terms of skills and competences of physicians and staff.

The second category is functional. It was divided into three dimensions: (1) tangible concern, (2) service process and (3) interaction. Also we defined sub-dimensions for service process and interaction dimensions as they were discovered to be rather complex and contain various deep aspects. Concerning the first dimension tangible concern, it relates to an appearance of personal that could impact on interaction between patients and healthcare service providers. The second dimension, service process was described by four sub-dimensions, namely

- efficiency measures that could be explained by a speed of procedures;
- reliability or accuracy of procedures;
- assurance or safeness of processes;
- access or affordable care
Table 4. Categories and dimensions of Healthcare Service Quality.

| Categories and dimensions of healthcare service quality |
|---------------------------------|-----------------|-----------------|
| **categories**                  | **dimensions**  | **sub-dimensions** |
| **Technical category**          | tangible quality |                  |
|                                 | health service outcome |                  |
|                                 | professional skills |                  |
| **Functional category**         | tangible concern | efficiency measures |
|                                 | service processes  | reliability      |
|                                 | interaction       | assurance        |
|                                 |                  | access           |
|                                 |                  | reliability      |
|                                 |                  | responsiveness   |
|                                 |                  | assurance        |
|                                 |                  | empathy          |
|                                 |                  | patient-centered |
|                                 |                  | access           |
|                                 |                  | efficiency       |
|                                 |                  | information      |
| **Environmental category**      | infrastructure   |                  |
|                                 | location         |                  |
|                                 | atmosphere       |                  |
| **Administrative category**     | efficiency measures |                |
|                                 | access           |                  |
The third dimension was identified as *interaction* with its’ eight sub-dimensions. These sub-dimensions are the following:

- **reliability** means that healthcare services are delivered dependably and accurately;
- **responsiveness** or willingness to help patients;
- **assurance** that relates to courtesy and emotional support or building feeling of trust and safeness among patients;
- **empathy** could be explained as individualized care, namely it means that doctors, nurses, and staff have personalized knowledge of patients;
- **patient-centered** presents patients involvement in their care and decision-making about their care;
- **access** refers to an aspect that doctors, nurses, and staff makes themselves available and accessible for patients;
- **efficiency** is the time spent for focusing on each patient;
- **information** is defined as an explanation of complex technical information or/and information about what expect within clinical routine etc.

It should be noted that all functional quality sub-dimensions within the dimension “*interaction*” could be examined from both physicians’ and staff’s perspectives.

*Environmental* category is the third category of healthcare service quality. It comprises three dimensions. The first is *infrastructure*. It could be assessed as convenient places, available parking, a variety of clinical services available, use of up-to-date technology such as computers and others. The second is *location* and the third is *atmosphere*. The latter involves such aspects as safety and security in and around the facility, cleanliness and comfort, quality of food provided, a quiet and pleasant environment.

Afterwards there is the fourth health quality category named *administrative*. The last category involves two dimensions such as **efficiency measures** and **access**. Efficiency measures could represent accurate billing, efficient referral processes, short waiting times for appointments etc. Access relates to time for visits and assistance from staff in navigating the health system. Administrative category we relate to staff concerns. However, it depends on a specific healthcare organization and whether physicians or staff is in charge of conducting administrative tasks.

Thus, we have combined all discussed health quality categorizes and dimensions and we will study patients’ and service providers’ perception of healthcare service quality on their bases.

**2.3. Healthcare service quality: patients vs. health service providers**

*Within the third section we will study healthcare service quality from two sides, namely patients and health service providers. The main focus within this discussion will be made on the presented final healthcare service quality categories and dimensions.*

As we considered that both patients’ and health services providers’ opinions were essential within our research, we are intended to derive an aligned or combined perception of healthcare service quality. Mutual approach toward this perception will provide possibility to have “a complete view of the care provided” (Pallis et al., 2009, p.
Obviously a complete view of the care provided will be a rather beneficial tool for healthcare organizations’ prosperity. However, we believe that it could be rather challenging to find areas of common interest between two presented parties, as it was discussed above that their perceptions of healthcare service quality could be very distinctive. This discrepancy is a gap between customers’ and service providers’ perception of service quality (see the section 2.2. “Healthcare service quality”). Hereby in order to be able to find similarities or complementary within patients’ and health service providers’ perception, we will study what each party consider as mostly important quality dimensions on the bases of the outcome from the section 2 “Healthcare service quality”.

Before immediately moving to reviewing both parties perception, we will discuss issues which could have some impact on forming of these perceptions but will not be considered within the boundaries of our research.

First, patients’ perception of healthcare service quality could depend on various aspects such as previous experience, social and cultural norms, health specifications, patient demographics (e.g., age, gender), patients’ knowledge about procedures, medicine etc (Sofaer & Firminger, 2005, p. 520). patients could be affected by word-of-mouth which takes part in building reputation of a healthcare organization (Lee et al., 2006, p. 565; Chilgren, 2008, p. 223). We are aware about this possible influence and that it could significantly change a revealed perception. But it should be noted that the main purpose of that part of the research is to create an aligned or combined perception of healthcare service quality while the question of a deep patients’ perception affected by various factors could be developed into an individual research. Hereby, reviewing patients’ opinion about the importance of different healthcare service quality dimensions, we are not taking into account possible effect of various mentioned aspects.

Second, health service providers’ perception of healthcare service quality could be heterogeneous due to existence of various sub-cultures within healthcare organizations. According to HEALTHQUAL model there are two types of health service providers, namely physicians and staff. This division could be continued further. Additionally to physicians, there could be pointed out healthcare managers and front-line staff which including nurses, laboratory technicians, and receptionists (Chilgren, 2008, p. 224). It could be notice we have already discussed the composition of healthcare service providers in the section 2.2. “Healthcare service quality” and within this section we presented another approach of categorizing types of healthcare service providers. However we should mention that regarding the purpose of our research we are not intended to study perception of healthcare service quality from points of view of all three types of healthcare service providers separately. But we are aimed to discover overall perception of healthcare service quality by incorporating perspectives of various representatives of healthcare service providers. So, by describing various approaches toward categorization of healthcare service providers, we show our awareness about their existing and attempt to separate physicians from other representatives of healthcare providers.

Returning to the discussion of listed representatives of healthcare organizations’ employees in terms of the purpose of our study, all of them play a significant role within achieving high quality of health service. Physicians deliver directly medical treatment. Healthcare managers are responsible for ensuring that patients receive services that
would make them to continue treatment within their healthcare organization by focusing on managing healthcare employees (Chilgren, 2008, p. 224). Front-line staff creates the first and the last impression of a healthcare organization what could be vital for forming customers’ perception of quality (Chilgren, 2008, p. 224). Hereby it could be argued that opinions of all presented healthcare employees are important for consideration in terms of constructing health service providers’ perception of quality. According to the main purpose of our research, we are not directed to study perception of quality within health service providers to a wide extent. So, we decided not to incorporate possible influence of various sub-cultures of healthcare organizations on forming of health service providers’ perception of quality. But we are aware about consequences of our choice relative to our future findings. Therefore, we will try to embrace as much as possible sub-cultures representatives within our empirical study in order to discover the most overall definition of service quality among health service providers. More explicitly this issue will be discussed later in the part “Data collection methods”.

Concluding, within the aim of our first research problem, namely discovering an aligned or combined perception of healthcare service quality in terms of patients and health service providers, we are not considering a possible impact of low-level divisions of mentioned parties and various aspects that could affect patients’ perceptions. However, within examining both parties’ points of view on healthcare service quality dimensions, we will review some dimension regarding to physicians and staff in order to be able to discover the most essential quality dimensions for developing an aligned or combined perception of healthcare service quality.

Defined boundaries in terms of studying patients’ and health service providers’ perception of healthcare service quality, we will proceed to discussion of two parties’ opinions about selected healthcare service quality dimensions.

As it was stated before healthcare services as well as overall services could be described by technical and functional quality dimensions. The technical quality dimension within the Healthcare industry could be defined as “quality-in-fact” and could be related to “the technical accuracy of the diagnoses and procedures” (Miranda et al., 2010, p. 2137). There are some points of view (Miranda et al., 2010, p. 2137; Kenagy et al., 1999, p. 661) which argue that patients are not able to judge technical quality of healthcare services as this information is not accessible for them and they could feel themselves not enough qualified for such assessments. It could be inferred, as mainly technical information is under consideration of healthcare organizations’ practitioners and administrations (Miranda et al., 2010, p. 2137) then the technical quality dimension should be related to them. The functional quality dimension within the Healthcare industry is linked to “the manner in which the healthcare service is delivered to patients” (Miranda et al., 2010, p. 2137). Within the research conducted by Kenagy et al. (1999, p. 661) service quality measurement was defined to be based on features which could be understood and valued by customers. In terms of healthcare patients, it was stated that they usually perceived innervations as safe and medical expertises as qualified (Kenagy et al., 1999, p. 661). Hereby the main patients’ emphasis will be made on the manner of service delivery or functional quality dimension (Miranda et al., 2010, p. 2137; Kenagy et al., 1999, p. 661). The importance of delivery was emphasized by Owusu-Frimpong et al. (2010, p. 207) and Chilgren (2008, p. 224). The latter author stated that efficiently delivered intangible factors of a health service could mitigate some complication within technical aspect of care.
Comparing various attitudes toward technical and functional aspects of healthcare service quality between patients and service providers, we could assume that one of the causes of gap between two parties’ perception of service quality could be better patients’ awareness about the functional side of healthcare service quality while health service providers’ are more aware about the technical side.

Another possible cause of the gap between customers’ and service providers’ perception of service quality could be that health service providers, particularly healthcare managers, are more concerned about infrastructural issues within their organization and do not pay enough attention on issues which customers perceive as reasons of poor service quality (Miranda et al., 2010, pp. 2145-2147). For example, within the research conducted by Miranda et al. (2010, pp. 2145-2147) it was discovered that healthcare managers tended to overestimate some quality issues such as efficiency issues (e.g. the ease of making an appointment, waiting times in the health centre before entering the consulting room, complaints resolution), non-health staff issues (e.g. kindness and politeness, attention to patients’ problems etc.), health staff issues (e.g. personalized service, interest in solving the patients’ problems) while patients considered this attributes as delivered at not appropriate quality level.

Making a linkage between the latter issues and the list of health quality dimensions, it could be stated that patients suppose that administrative category, namely access dimension (e.g. the ease of making an appointment) and efficiency measure dimension (e.g. waiting times in the health centre), functional category, namely interaction dimension, responsiveness in terms of physicians (e.g. interest in solving the patients’ problems), assurance in terms of both physicians and staff (e.g. kindness and politeness, attention to patients’ problems) and empathy in terms of physicians (e.g. personalized service) should be addressed in order to improve service quality while service providers consider delivering services at a good level of quality in terms of mentioned categorize.

Wopat presented fifteen drivers which important for patients in terms of healthcare service quality. Only three factors out of fifteen are clinical while the rest courtesy and empathy or functional category with stress on interaction dimension in terms of physicians and staff (2007, cited in Chilgren, 2008, p. 224).

Within the study of Owusu-Frimpong et al. (2010, pp. 212, 216) it was discovered that patients considered difficult to access treatment and this problem should be solved in order to improve quality of health service. Hereby, we could suppose that for patients’ perception of healthcare service quality is significant access dimension within either functional or administrative category. According to the research of Fröjd et al. (2011, p. 233) patients wanted to be provided with more information and to be able to participate in a treatment process. So, it is important to consider functional category of healthcare service quality, namely patient-centered and information dimensions.

The study conducted by Jun et al. (1998) revealed that patients as well as health service providers, namely physicians and administrators, agreed on the importance of such healthcare service quality dimensions as: “tangibles, reliability, communication, competence, understanding customer, access, and collaboration”. Comparing to our list of healthcare service quality dimensions we could suppose that they correspond to tangible and professional skills dimensions within technical category, interaction dimension of functional category. Also this study (Jun et al., 1998) supported earlier
mentioned fact that physicians think technical category to be more important while patients are more concerned about functional category of healthcare service quality. Also within this study, it was expressed that during communication physicians tend to focus on discovering a problem and deciding a way of treatment rather than excessively concentrate “on being “nice” to patients” (Jun et al., 1998). Moreover Jun et al. (1998) suggested that physicians emphasized competences and patients outcomes which could refer to professional skills and health service outcome quality dimensions within our list.

Within the study of Hudelson et al. (2008, p. 35) it was discovered that health service providers perceived quality as “intersection of the human and the technical aspects of healthcare”. Hereby, we again could notice that physicians stress technical category of healthcare service quality.

Summarizing studied information, we detected that within most reviewed studies patients recognize functional category of healthcare service quality as the most important. However according to some other studies importance of administrative and technical category was considered by patients as well. The same trend could be revealed among health service providers. They emphasized importance of technical category but did not deny relevance of functional category as well. Regarding health quality dimensions their types vary from one study to another. So, we suppose that quality dimensions are purely contextual issue due to involvement of subjective perceptions of healthcare service quality among patients as well as among health service providers. Owing to a possibility to develop an aligned or combined perception of healthcare service quality, within the literature we found out that both parties have some differences and some similarities within their opinions. However main focuses among them are different. Also we did not detect any contradictory perceptions. But as we supposed that it could be contextually-dependent case then we could face a challenge in dealing within contradictory opinions within our empirical study.

Making a conclusion, in order to construct an aligned or combined perception of healthcare service quality, further we will conduct an empirical study within our specific empirical context. For implementation of this study we will utilize a derived list of health service categories and dimensions. Afterwards we will compare our findings to facts revealed within the part 3 “Healthcare service quality: patients vs. health service providers”.
3. Methodology

The chapter three is aimed to present a philosophical approach that will guide us throughout the whole study and will direct our selection of methods and tools for conducting empirical study, namely collecting data and further its analysis.

First we will present overall philosophical approach toward both research questions. Afterwards on the bases of it we will decide about research approach and design. Moreover for the purpose of the empirical study we will elaborate selection of methods for collecting data and deriving sampling for it. Also a way of conducting analysis of collected data will be depicted within this chapter. It should be mentioned that we also will incorporate a discussion about reliability and validity as well as discussion of ethical considerations.

3.1. Research philosophy

Research philosophy, mainly concerns the issues of how knowledge is developed and what is a nature of this knowledge (Saunders et al., 2009, p. 107). Basically it suggests ways how to ‘view’ and ‘understand’ reality. As research philosophy contains different approaches on how social phenomena should be viewed and studied, we used it as our guide in choosing research strategy and methods.

Considering the specific characteristic of our research that consists in two research questions, there are two main focuses: healthcare service quality and quality management initiatives. We argue that healthcare service quality could be perceived as a social phenomenon owing to humans’ involvement in meaning creation of quality. Quality management initiatives are generally models or patterns that should be followed in order to improve quality. These models in terms of their “hard” aspects (e.g. tools, techniques) cannot be affected by people’s perceptions as techniques and tools are fixed. However, quality management models’ “soft” side (e.g. concepts, principles, methodologies) could be impacted by humans’ perceptions.

As we touched two different aspects with distinctive philosophy bases within two research questions, it was reasonable to discuss research philosophy for both of them.

Research philosophy: Healthcare service quality

Regardless of the predominant assumption that healthcare service quality should be studied from objectivist view, we believe that it would not have brought desirable results considering our case. Instead we follow the perspective that was presented by Grönoos’s (1984), Parasurman’s (1988) and other researchers. According to them service quality has many dimensions and can be understood through perception of customers. This issue of multidimensional nature of service quality as well as healthcare service quality was discussed in the first literature review. Consequently, if we had used an objectivist approach we would not have been able to explore service quality under different perspectives (Schembri & Sandberg, 2002, p. 194).

Moreover, considering healthcare industry, the vision of service quality has also been changed. Now it is widely accepted that service quality in healthcare should be viewed
from different perspectives of involved people (Pope et al., 2002, p. 148). Indeed, complexity and multidimensionality of the concept of quality and at the same time complexity of healthcare system makes it impossible to view quality separately from researched subjects. So, previously held position that service quality in healthcare could be comprehended only through performance measures was considered to be irrelevant in modern research (Pope et al., 2002, p. 148).

Hence, in terms of the research philosophy approach, interpretivism is the most appropriate epistemology for our study referring to the research question of healthcare service quality. Interpretivism approach is subjective in nature and tries to explain reality in terms of social actors (Bryman & Bell, 2011, p. 16). It goes in line with our first research question as we tried to identify subjective characteristics of the social phenomenon, namely understanding of healthcare service quality from patients’ and health service providers’ sides. Chosen the interpretivism stance and thus accepted the fact that social situations are rich and complex and cannot follow the laws as it is in physical world, we understood that generalisability of data were under question (Saunders et al., 2003, p. 84). Such approach applied to our research because the concept of service quality can be comprehended only through quality perception of people who are involved into this service process (Bryman & Bell, 2011, p. 17). We argue that there is no ‘absolute quality’ and it cannot be defined and measured. Service quality is social phenomenon that can be recognized only by studying interpretations of patients and healthcare service providers.

Deciding about the second main research philosophy aspect, namely ontology, it is important to identify whether social phenomena is external to the social actors or it should be comprehended through the actions of social actors (Bryman & Bell, 2011, p. 20). In compliance with the stated research purpose and the first research question, our studied social phenomenon is subjective. We are not aiming to study healthcare service quality as tangible reality that exists on its own and people cannot influence it. We want to focus on healthcare service quality as a social construction that continuously created and changed by healthcare service providers and patients. Thus, our ontological position is constructionism as we believe that social actors are actively involved in construction of healthcare service quality meaning.

So, interpretivist position and associated with it constructionism helped us effectively address our first research questions.

**Research philosophy: Quality management initiatives**

In terms of defining the philosophical approach toward the second research question that was directed to develop a combined quality management model on the bases of constructed aligned or combined perception of healthcare service quality from the first research question, it should be stated that we were aimed to connect specific defined dimensions of the aligned or combined healthcare service quality with specific concepts and techniques of three quality management initiatives (i.e. TQM, Lean and Six Sigma). The first part, namely the aligned or combined healthcare service quality, is subjective in its nature as it was deliberated in the previous part, while the second part, main concepts and techniques of three quality management initiatives, is objective as these concepts and techniques are settled elements of models and are not affected by people’s
judgments. Hereupon, it is rather challenging from the first glance to decide what research philosophy should be followed.

According to the second research question, we selected the most essential techniques and tools from TQM, Lean and Six Sigma concepts following subjective views of respondents on service quality. Also construction of the model was based on our own interpretation of reality and view of existing knowledge. So, we cannot consider generated knowledge as completely objective even though we are not going to test the techniques and tools on its applicability within organizations.

3.2. Research approach

The choice of a research approach is important step in further constructing research design and choosing research methods as it clarifies the issues concerning the usage of theory in the research (Saunders et al., 2009, p. 126). Whether the theory should be tested or build implies the use of deductive or inductive approach (Saunders et al., 2009, p. 124).

By taking philosophical approach as interpretivism, our study should have become inductive in its nature however we used neither inductive nor deductive but rather mixed approach as we incorporated the features of both approaches. We started our research by developing theoretical framework and then conducted our empirical study by getting different points of view about the service quality in healthcare. Then we tried to comprehend and analyze wide range of perceptions within our empirical study and finally to construct one aligned or combined perception of service quality that was basically a formulation of a theory. Hereby our first step could be defined as deductive (Saunders et al., 2009, pp. 124-125) relative to applied process as we have predefined categories of healthcare service quality for conducting the empirical study. However the result of our first part of the research could be attributed to inductive approach if treat the aligned or combined perception of healthcare service quality as a new theory.

Afterwards we studied our second theory about quality management initiatives that refers to the second research question. In order to arrive to a combined quality management model for service quality improvement we analyzed our second literature review in accordance with our discovered perception of healthcare service quality from the first research question. We could argue that this second step could be seen as inductive (Saunders et al., 2009, p. 126) as our aim was to develop a new approach toward assembling the quality model or constructing a new quality management model in other words. So, we started from findings about perception of quality and by analyzing them together with the second literature review, the combined quality management model was assembled. However from another point of view this process could be seen as deductive if findings from the empirical study are considered as predefined theory.

Logically, considering our epistemological and ontological orientation as well as research approach, our research is qualitative in its nature. Qualitative research focuses on generation of theories, on how social actors interpret reality and on “words” in collection and analysis of data (Bryman & Bell, 2011, p. 27). It goes in line with the one of our research purposes that is aimed to identify characteristics of service quality through our interpretation of individuals’ perception and this implied collection of
qualitative data. In order to achieve another research purpose namely constructing combined quality management model, we utilized interviewees’ interpretations of healthcare service quality. Also, it should be pointed that the outcome of the second research was theory generation (i.e. the quality management combined model) rather than testing of existing knowledge. Hence, the second research purpose incorporates qualitative features as well. Moreover, considering a research in healthcare settings, qualitative research turned out to be more consistent for some specific studies than traditionally used a quantitative one (Powell & Single, 1996, p. 499). To comprehend complex issues and develop concepts, qualitative study proved to be more detailed and valid than quantitative (Powell & Single, 1996, p. 499).

### 3.3. Research design

After we decided about the philosophy and approach toward the research problem, next it was important to outline our research design. Research design is a plan of how to collect and analyze relevant information including methods, sources, constraints and ethical issues (Saunders et al., 2009, pp. 136-137). Essentially we could consider research design as a roadmap for a study. Taking into account our case the best type of this roadmap was determined as exploratory. Exploratory study focuses on asking questions, gaining insights, view phenomena from different perspectives and clarifying the researched problem (Saunders et al., 2009, p. 139). Our problem discussion showed that there was a need for a common definition of quality for efficient adopting of quality management initiatives. Hereby, chosen research design helped us to explore one common perception of quality. Also exploratory research design assisted us in selecting quality management techniques and concepts for the combined model as it was based on insight in quality management from revealed perspective of healthcare service quality. Moreover the structure of our both research questions predetermined the type of research design as they were “what” questions and were intended to gain new information (David & Sutton, 2011, p. 11).

According to the determined exploratory nature of our research design, we defined data collection methods, sampling approach and data analysis methods that were the most suitable for our study. Listed three aspects were discussed further in details.

#### 3.3.1. Data collection methods

Regarding the first research question that is aimed to explore an aligned or combined perception of healthcare service quality in terms of patients and healthcare service providers, we could emphasize that we need to reveal an understanding of healthcare quality from patients and healthcare service providers’ points of view separately in order to obtain an answer to the first research problem. Considering an exploratory approach within our qualitative study expressed in an intention to investigate people’s in-depth perception of such phenomena as service quality and particularly in the healthcare, we decided to utilize a qualitative method of data collection, namely interviews. This method is considered to be the most suitable owing to our objective (Ghauri & Grønhaug, 2002, p. 88).

Deciding about a type of the qualitative interviews, we chose to conduct semi-structured rather than in-depth interviews. The decision is supported by the fact that the latter does not involve any predetermined list of questions (Saunders et al., 2003, p. 247), while we
have the list of healthcare service quality categories and dimensions on the bases of which we studied interviewees’ perception of quality. Hence, semi-structured interviews gave us possibility to have a list of themes to be covered and to develop additional or follow-up questions in order to get deeper knowledge of interviewee’s opinions. Also bringing a structure in interviewing process enabled us to touch issues that respondents may consider important (Bryman & Bell, 2011, p. 512).

Within the first research problem, there are two types of subjects of the research, namely patients and healthcare service providers. Semi-structured interviews were conducted for both parties. However, it should be noticed that we applied different questions for patients (see Appendix 2) and healthcare service providers (see Appendix 1) due to their distinguishing roles within standing points toward the healthcare while the focus of all inquired questions was on the same healthcare service quality categories and dimensions that are presented in the Table 4.

The consequence of questions was defined relative to the purpose, to generate interviewees owns’ associations with a healthcare service quality and avoid biases by given them information about existing quality categories and dimensions. Hereby, we made a decision to start from general questions about a healthcare service quality without highlighting specific quality categories and dimensions. Regarding patients these questions are questions number 7, 8 and 9 from the list of questions for interviews (see Appendix 2) while for healthcare service providers they are presented by questions number 6, 7 and 8 (see Appendix 1). For example one of the first questions is about the first association relative to healthcare service quality. And this type of question was applied for both patients and healthcare service providers. When we acquired information about interviewees’ general perception of a healthcare service quality, we applied follow-up questions or proceed to a new section of questions with a hidden focus on our determined list of healthcare service quality categories and dimensions. Such strategy assisted us to elude answers that were imposed by provided quality aspects at the beginning and later to explore interviewees’ perceptions in terms of the pre-developed list of healthcare quality categories and dimensions.

So, within the list of questions for patients (see Appendix 2), the question number 10 about communication is directed to functional category, questions number 11 and 12 relate to environmental category while the question number 13 was aimed at administrative category. It should be noted that some question are developed for identifying several categories at the same time. For example follow-up questions for the question number 10 were expected to detect not only functional but technical, environmental and administrative categories as well. Considering the list of questions for healthcare service providers (see Appendix 1), the question number 9 refers to functional category, the question number 10 with its follow-up questions could be relate to functional, environmental and administrative. And the question number 10 was aimed to investigate all four categories.

Questions that were used within interviews were open-ended questions. It helped us to focus on specific experiences of the respondents, their reflection on reality and follow-up questions assisted in making points of view explicitly understood and valid (Schembri & Sandberg, 2002, p. 199). The type of questions we employed were mainly “what” and “how” questions what made answers more descriptive. Data with a descriptive nature was the most suitable for our study as interviewees expressed their
perceptions but also defined what they have meant by it. It was a vital aspect for further analysis, as it prevented us from wrong interpretations of interviews’ answers. Moreover general questions about healthcare service quality gave us possibility to provoke respondents to discuss some quality aspect that have not been included into the list of healthcare service quality categories and dimensions.

### 3.3.2. Sampling framework and technique

The construction of the sample for the empirical study was directed by the purpose of the study that is to propose an approach toward constructing a combined quality management model on the bases of an aligned or combined healthcare service quality perception. As an approach is defined to be basic then we do not intend to link it to a specific context (i.e. country or organisations). Hence, the target population both patients and healthcare service providers for this study was derived from several healthcare organizations from Sweden and from Russia. Also due to complex system of the healthcare (i.e. rigid time schedules of healthcare employees, some barriers in contacting patients through healthcare organization) there were no possibilities to select respondents from the same healthcare organisation. However it should be mentioned that in practice patients and healthcare service providers should be selected from the same healthcare organization as it will give opportunity to discover a perception of quality purely for the specific organization. And in this case a combined quality management model will be constructed in the most efficient way.

Table 5. The sample of interviewed patients.

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Gender</th>
<th>Age</th>
<th>Occupation</th>
<th>Last visit to hospital</th>
<th>Type of hospital</th>
<th>Country of experience of the healthcare service</th>
<th>Place of the interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondent 1</td>
<td>Female</td>
<td>21</td>
<td>student</td>
<td>February, 2012</td>
<td>The main hospital</td>
<td>Sweden</td>
<td>Umeå University</td>
</tr>
<tr>
<td>Respondent 2</td>
<td>Male</td>
<td>26</td>
<td>student</td>
<td>December, 2011</td>
<td>The district hospital</td>
<td>Sweden</td>
<td>Umeå University</td>
</tr>
<tr>
<td>Respondent 3</td>
<td>Male</td>
<td>22</td>
<td>student, employed</td>
<td>March, 2012</td>
<td>The main hospital</td>
<td>Sweden</td>
<td>Umeå University</td>
</tr>
<tr>
<td>Respondent 4</td>
<td>Female</td>
<td>21</td>
<td>student</td>
<td>January, 2012</td>
<td>The main hospital</td>
<td>Russia</td>
<td>Skype</td>
</tr>
<tr>
<td>Respondent 5</td>
<td>Male</td>
<td>32</td>
<td>student, work experience</td>
<td>March, 2012</td>
<td>The main hospital</td>
<td>Sweden</td>
<td>Umeå University</td>
</tr>
<tr>
<td>Respondent 6</td>
<td>Male</td>
<td>25</td>
<td>PhD student</td>
<td>March, 2012</td>
<td>The district hospital</td>
<td>Sweden</td>
<td>Umeå University</td>
</tr>
<tr>
<td>Respondent 7</td>
<td>Female</td>
<td>54</td>
<td>unemployed</td>
<td>March, 2012</td>
<td>The main hospital</td>
<td>Russia</td>
<td>Skype</td>
</tr>
<tr>
<td>Respondent 8</td>
<td>Female</td>
<td>71</td>
<td>retired</td>
<td>November, 2011</td>
<td>The district hospital</td>
<td>Russia</td>
<td>Skype</td>
</tr>
</tbody>
</table>

As our study is qualitative in its nature and our purpose is not to generalize the results but to get insights about service quality from subjective points of view, non-probability sampling was decided to be the best approach (Marshall, 1996, pp. 522-523). Our sample technique was purposeful as we tried to select interviewees that could benefit our research aim to the great extent (Marshall, 1996, p. 523). Regarding patients we
stratified subjects according to organizations they have visited (e.g. district hospitals and main hospitals), characteristics of individuals such as occupations (e.g. students, students with work experience, PhD student, unemployed and retired), demographical features (e.g. gender, age). Such approach provided some variability within the sample (Hudelson et al., 2007, p. 30; Marshall, 1996, p. 523).

Table 5 depicts the sample of patients selected for our empirical study. Thus, among patients, there were 5 people visited main hospitals and 4 people visited district hospitals. 6 respondents were students within which 2 students have work experience and 1 is a PhD student. Additionally we interviewed 1 unemployed and 1 retired respondent. Regarding gender of respondents there are 4 males and 4 females. Concerning age characteristics there are 6 people in the range from 21 to 32 years old and two respondents are at the age of 54 and 70 years old. We should highlight that presented characteristics utilized only for the purpose of selecting a sample. Also we presented this within the analysis of the data but we did not study their influences on respondents’ perceptions. We should mention that the point about the last visit to the healthcare organization depicted that it occurred not a long time ago. Hence, we could assume that respondents still remember their feelings regarding their recent experience.

Table 6. The sample of interviewed healthcare service providers.

<table>
<thead>
<tr>
<th>Healthcare service providers</th>
<th>Gender</th>
<th>Age</th>
<th>Occupation</th>
<th>Speciality</th>
<th>Years in the practice</th>
<th>Country of employment</th>
<th>Place of the interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provider 1</td>
<td>Female</td>
<td>51</td>
<td>logopedist</td>
<td>logopedist</td>
<td>25</td>
<td>Russia</td>
<td>Skype</td>
</tr>
<tr>
<td>Provider 2</td>
<td>Male</td>
<td>50</td>
<td>urologist</td>
<td>urologist</td>
<td>30</td>
<td>Russia</td>
<td>Skype</td>
</tr>
<tr>
<td>Provider 3</td>
<td>Male</td>
<td>47</td>
<td>ophthalmologist</td>
<td>ophthalmologist</td>
<td>19</td>
<td>Russia</td>
<td>Skype</td>
</tr>
<tr>
<td>Provider 4</td>
<td>Male</td>
<td>49</td>
<td>physician of intensive care</td>
<td>physician of intensive care</td>
<td>25</td>
<td>Russia</td>
<td>Skype</td>
</tr>
<tr>
<td>Provider 5</td>
<td>Male</td>
<td>42</td>
<td>district physician</td>
<td>general practitioner</td>
<td>7</td>
<td>Sweden</td>
<td>The hospital</td>
</tr>
<tr>
<td>Provider 6</td>
<td>Male</td>
<td>62</td>
<td>district physician</td>
<td>general practitioner</td>
<td>47</td>
<td>Sweden</td>
<td>The hospital</td>
</tr>
<tr>
<td>Provider 7</td>
<td>Female</td>
<td>41</td>
<td>district nurse</td>
<td>nurse</td>
<td>20</td>
<td>Sweden</td>
<td>The hospital</td>
</tr>
</tbody>
</table>

Within the table 6 there is presented the sample of healthcare service providers derived for the empirical study. Concerning this type of respondents, its sample involves representatives of two sub-cultures, 6 physicians and 1 nurse. The sample of doctors consists of physicians with various specialties. The age range is presented by 4 respondents from 41 to 47 years old, 1 respondent of 51 years old and 1 respondent of 62 years old. Moreover all healthcare service providers from the sample have various amounts of years in the practice.

Considering individual aspects of respondents presented in the tables 5 and 6, they are crucial for cases when a combine quality management model is going to be developed for a specific healthcare organization or for specific group of patients. For example it
could help to investigate what type of interaction should be applied for females of specific age. But as we are aimed to propose a basic approach we have just presented aspect of incorporating individual characteristics as an example. But it is suggested to consider the mentioned aspect for real cases.

Another issue that should be pointed is that we have considered individuals that contribute to the study in the most efficient way, so we used snowball sampling by considering recommendations of previous respondents about potential candidates in the case with patients. In the case with healthcare providers the sample was derived through recommendations of healthcare authorities in Sweden and personal contacts in Russia. Concerning patients, we interviewed eight people who have been patients or currently are patients of healthcare organizations in Sweden and Russia. In the case of healthcare providers we conducted interviews with overall 7 people from Sweden and Russia who are currently employed in healthcare organizations. Since to get access to individuals was rather challenging task, our sample shared features of convenience sample. It means that our sample was derived from the most accessible respondents to some extent (Marshall, 1996, p. 523). However, the elements of purposeful sample technique were incorporated as we tried to select people with different demographic characteristics and experiences (e.g. country of experience healthcare service, healthcare organizations, namely district or main hospital).

The size of our sample was not strictly defined prior to the study owing to the nature of our research. As the study progressed we started to realize what number of subjects we need. After five interviews with patients new ideas and attitudes toward perception of healthcare service quality stopped to emerge and we reached a saturation stage. We conducted three more interviews with patients to confirm the fact of saturation. We decided about the sample size we were mainly concerned about its ability to answer the research question but not to generalize our results (Marshall, 1996, pp. 522-523). Relative to interviews with healthcare service providers, the size of their sample was directed mainly by accessibility as there are a lot of barriers in contacting them. We could argue that saturation was reached in terms of healthcare providers as respondents discussed mostly the same things but they prioritized them differently.

Interviews with respondents were conducted in two ways, namely personal meetings and video calls on Skype. So, five patients were interviewed at Umeå University cafeteria and studying hall while other three patients were interviewed by Skype video call. Regarding healthcare service providers Skype interviews were carried out with four respondents and the rest three were interviewed at the hospital. All interviews were recorded by means of dictaphone and sound recording software on computer.

### 3.3.3. Data analysis

Considering the structure of our research, namely two research questions and the division of the literature review, we led two separate data analysis. The first data analysis was carried out on the ground of the first literature review and findings from the empirical study while the second data analysis was based on the results from the first data analysis and the second literature review. Hence, there were two data analysis:

- Data analysis referring to an aligned or combined perception of healthcare service quality from patients’ and healthcare service providers’ perspectives;
Data analysis relating to a combined Quality Management model.

Generally, qualitative data analysis does not have one single approach as the process is always iterative and continuous, starting from the point of data collection and constantly reviewing all gathered material and developed concepts (Fitzpatrick & Boulton, 1994, p. 111; Bradley et al., 2007, p. 1760). In our research we chose to implement a content analysis for both data analysis.

Content analysis is a research method that helps to make reasonable and authentic conclusions from gathered data in order to get new knowledge, insights, and perspectives into phenomena through categories (Elo & Kyngäs, 2008, p. 107). Therefore, it goes in line with our first research question as we build perception of healthcare service quality based on predefined categories of quality. According to the second research question, the studied phenomenon is combined quality management model that will be developed on the background of categories from an aligned or combined healthcare service quality perception. Moreover, according to Morgan (1993, cited in Elo & Kyngäs, 2008, p. 108) content analysis is applicable in qualitative research despite some critics that it is more quantitative in its nature. Another aspect of content analysis that could benefit our study is that there is possibility to adopt either inductive or deductive approaches (Elo & Kyngäs, 2008, p. 109). According to our study we utilize deductive approach as we have predefined categories based on the theory. In the case of the first research question we analyzed transcripts of interviews in terms of predefined categories and dimensions of healthcare service quality. However, we considered a possible emergence of new categories and dimensions of healthcare service quality during the process of scrutinizing data. It should be mentioned that our content analysis involved both qualitative and quantitative features. Quantitative features relate to adopting such methods as utilizing predefined categories and quantify content of interviews in terms of them (Bryman & Bell, 2011, p. 291). Qualitative approaches consist in giving possibility of arising of new categories during an analysis process of contents (Bryman & Bell, 2011, p. 560). Additionally we could argue that as we were looking for indirect connection between various comments of respondents and hidden meanings of their statements they could be seen as qualitative methods as well.

Regarding the second research question we will examine selected literature about TQM, Lean and Six Sigma. It will be done through applying categories and dimensions that constitute aligned or combined healthcare service quality. It could be noted that we utilize content analysis except for some elements as we are not aiming to define or test categories but we intend to reveal the most essential. However, we still could argue that it is applicable to use content analysis within our study as it was defined to be flexible and without ‘right’ way of doing it (Elo & Kyngäs, 2008, p. 107).

First data analysis: an aligned or combined perception of healthcare service quality from patients’ and healthcare service providers’ perspectives

The purpose of our first data analysis is to explore an aligned or combined perception of healthcare service quality on the bases of patients’ and healthcare service providers’ perception of this quality. Data for the analysis will be obtained from conducted interviews with patients and healthcare service providers.
Our analysis will be divided in two parts (see Figure 2). Regarding the first part of that data analysis, we adopted a deductive position as we utilized an existing theory, namely categories and dimensions of healthcare service quality (see Table 4) for structuring data collection and its analysis (Saunders et al., 2003, p. 388). As it was mentioned before we conducted a content analysis in order to understand patients’ and healthcare service providers’ perception of a healthcare service quality. We chose particularly this technique of analysis as we were intended to discover what categories and dimensions of healthcare service quality have been cited throughout collected data (Leech & Onwuegbuzie, 2008, p. 596). For its purpose codes that were defined as dimensions of healthcare service quality were employed.

For structuring the analysis process we selected to follow some steps suggested by Miles and Huberman (1994, p. 92). Steps of our first data analysis are presented in the figure 3. Our first part of the analysis will relate to summarizing and packaging the data. Within this step we created texts for examining. As we conducted interviews with patients and healthcare service providers the collected data was initially presented as
notes and audio records. Further this data was transcribed for the purpose of later analysis. In case of respondents from Russia, interviews were initially conducted in Russian language and later audio records were translated into English language during the process of transcription. It should be pointed that the issues of translation is not regarded as limitation as contents of responses were not affected by translation to such extant that it could create any distortion of responses’ meanings.

We will present empirically collected information within Analysis chapter and among it will be presented the most relevant for the analysis data. This decision could be challenged as selection of relevant responses was made by subjective approach and could be perceived as not reliable. However, we selected the most relevant responses in terms of predefined categories and it is not reasonable to reveal all information as some answers are quite similar. At the same time, we will not overload our study with vast amounts of information.

Next step presented by Miles and Huberman (1994, p. 92) is to reveal categories of coding. We skipped this step as according to our deductive position the data had been collected in compliance with defined categories.

The following step is repackaging and aggregating the data. During this stage we examined patients’ and healthcare service providers’ answers to identify previously defined dimensions and categories by focusing mainly on the meaning of statements. Hence units of our content analysis are phrases or statements. Owing to the purpose of our study, we utilized codes for further ability to reveal what dimensions or sub-dimensions could be regarded to be the most vital for interviewees. In spite of predefined codes we were open for possibility of revealing some new aspects.

Then we defined what dimensions or sub-dimensions of healthcare service category originated in the mind of patients and healthcare service providers as the first associations in terms of healthcare service quality. This point relates to responses that were provided to the question number 6 in Appendix 1 and the question number 7 in Appendix 2. These answers are valuable for our analysis as they revealed the most important things for patients and healthcare service providers within healthcare services. First associations are not affected by any external destruction for example such as further questions that are intended to examine patients’ and healthcare service providers’ opinions about various predefined healthcare service categories. These further questions could direct patients’ and healthcare service providers’ answers to some extent if they are asked in the beginning of interviews. If responses to mentioned questions did not define category and dimensions of healthcare service quality straight forward we proceed to other questions in order to detect them by discovering some connections between provided answers. Also we used answers on various question in the case if there was obvious connection between them due to examine deeper perception of quality. It should be mentioned that within the whole analysis of respondents’ responses we took into account a flow of interviews. It means that we considered sequence of interviewees’ responses and connections between various comments. We believe that it helped us in deeper analysis of provided assertions by discovering some indirect connections or hidden meanings of comments.

Further we identified sub-dimensions and dimensions that were mentioned the most frequently. We suppose that if the same issue is raised several times within one
interview it indicates respondents’ concern in it. So, we utilized this approach as an evidence of importance of a mentioned aspect.

Afterwards, we selected the most important sub-dimensions or dimensions by matching the first associations and the most frequently mentions issues. Aspects that matched were regarded as the most important. And other first associations that were not mentioned often within interviews were treated as aspects of the second priority after the most important. Dimensions or sub-dimensions that were rather often mentioned but were not among the first associations are considered to be of the same importance as well as previously discussed aspect.

Moreover we mentioned minor sub-dimensions or dimensions that have not been taking into constructing an aligned or combined perception of healthcare service quality. But it is still reasonable to be aware about these aspects for our own interest and further researches.

We decided to follow this approach, namely treating data in terms of first associations and frequency of responses, as we believe it could be perceived as the most appropriate and reasonable way of analyzing because combing these two aspect it allow us easier define the most importance quality elements. We understand that interpretations of the researcher may not coincide with the meaning that is embedded in respondents’ statements. The subjectivity of the analysis may have a negative impact on the results of the study. In order to minimize the negative consequences of subjectivity in the analysis we will execute the "triangulation" principle. In our case it will be achieved by involving in the analysis not one but two analysts.

As a result of previously described steps we received patients’ and healthcare service providers’ perceptions of healthcare service quality in accordance with the established list of categories and dimensions within the first literature review or some newly emerged. As findings from two types of interviewees’ will be shaped to the same theoretical pattern it will give possibility for easier further analysis in terms of revealing aspects that will allow to make an alignment or combination of two types of perceptions. In order to formulate perception of healthcare service quality for patients and healthcare service providers, the part about the most important dimensions and sub-dimensions for the respondent was only utilized. According to this part we will have two lists. One list will involve the most important aspects and the second consist of aspects of the second priority. In order to develop one general perception for patients and one general perception for healthcare service providers, the first list will be supplemented by new aspects from the second list. But added aspects will be considered to be slightly less important.

The second part of the analysis relates to discussion of an exploration of an aligned or combined perception of healthcare service quality on the bases of the findings from the first part of the analysis (see Figure 3). Within the boundaries of that part we took an inductive position as we developed a theory, namely an aligned or combined perception of the healthcare service quality. This theory was based on conducted analysis of patients’ and healthcare service providers’ perceptions from the first part (Saunders et al., 2003, p. 28). Considering the pattern of the analysis process, this part of the analysis related to the part of developing and testing propositions in order to construct an explanatory framework (Miles & Huberman, 1994, p. 92). Bearing in mind the main
aim of that part of the analysis, we realized an examination of analyzed responses of all respondents. The outcome of the examination were discovered similarities and differences between patients’ and healthcare service providers’ perceptions. A selection of an aligned or combined perception of healthcare service quality was decided to be based on degree of similarities or differences in patients’ and healthcare service providers’ perceptions, respectively.

**Second data analysis: Combined Quality Management Initiative**

The second data analysis refers to the second research question that is aimed to construct a combined Quality Management model from three main initiatives TQM, Lean and Six Sigma on the bases of an aligned or combined perception of healthcare service quality that has been the result of the first data analysis (see Figure 3).

As it was mentioned within the part “Research approach”, an inductive approach was used for conducting the second literature review. Hence, the analysis of the data for this part complied with an inductive approach as well. It could be explained by the fact that combined quality management model was developed with an assistance of collected theory about concepts and techniques from TQM, Lean and Six Sigma within the second literature review and the analyzed empirical data about an aligned or combined perception of healthcare service quality.

Data that was utilized for the purposes of the second analysis were the empirical findings from the first data analysis and theoretical findings from the second literature review that covered the topic about TQM, Lean and Six Sigma. For the purpose of developing a combine quality management model, we used data from the second literature review that described initial TQM and Lean models which values, methodologies and tools have not been adapted neither to overall service industry nor to the healthcare. We decided to take such approach as it gave possibility to select quality management models’ elements from wider list without limitations which would have existed in terms of adjusted models. However, we applied exception for Six Sigma tools as different researchers suggested lists that incorporated a vast amount of various tools from simple till very sophisticated (Aboelmaged, 2010, p. 273; Koning & Mast, 2006, pp. 782-783; Natarajan et al., 2011, pp. 54-57). In order to have some boundaries for selections as we were not able to grasp all possible tools, we utilized rigid list of tools developed for service process (see Table 13). This list consists of basic tools as well as some tools adjusted for service processes. For our study we concentrated only on basic tools. Moreover elements of all three quality management initiatives such as values, methodologies and tools were selected from basic elements as they were considered to be most consistent with our purpose as we were mainly aimed to depict an approach toward developing a model. Hereby regarding this object we did not need any complex and special elements since they should be incorporated only in case of particular organization and its contextual conditions.

The qualitative data analysis technique was a content analysis. We argue that this type of analysis gave us an opportunity to detect the most essential concepts, i.e. quality management concepts and techniques, in terms of predefined codes. In terms of our research the content for examination was derived from findings within the second literature review. Codes for the analysis were determined deductively, specifically they were central healthcare service quality dimensions that have been identified through an
alignment or combination of patients’ and healthcare service providers’ perceptions. For the purpose of assembling a combined quality management model, we selected concepts, methodologies and tools from TQM, Lean and Six Sigma that could be perceived to be appropriate for managing quality categories, dimensions or sub-dimensions from an aligned or combined perception of healthcare service quality.

3.4. Ethical considerations

During our research we were concerned with ethical issues that could arise at different stages especially at the stage of collecting data. We realize that researchers have moral obligations concerning respondents and should stick to high standards of ethics in order to maintain the confidence of people in the researchers and their collected information.

Diener and Grandal (sited in Bryman & Bell, 2007, p. 132) suggested considering four major areas when thinking about ethical issues in the research:
- if there is a harm to participants;
- if there is a lack of informed consent;
- if there is an invasion of privacy;
- if deception is made.

In terms of the first area, we explored all possible ways in that we could harm our respondents. Confidentiality and anonymity norms were applied regarding individuals and their records. Also, all information was presented in such a way that has eliminated any possibilities of identification of persons. Thus, we ensured that any kind of harm such as harm to career and future opportunities or psychological harm was avoided.

The second area in terms of informed consent implies that participants should be informed about observation techniques and recording facilities used (Bryman & Bell, 2007, p. 138). During our study we presented to all participants the document stating all used recording facilities, namely notes and the dictaphone, and guaranteeing present and future anonymity of all gathered information. Hence, participants were able to make informed decision if they want to take part in study or not.

Issues concerning invasion of privacy were avoided as we treated each case individually and each person with respect. We have not intruded on respondents’ privacy and insisted on discussing sensitive issues. This area also relates to previous one, as we informed all our participants about what to expect from this study and they had a chance to withdraw from the participation. In order to insure interviewees about an ethical approach towards data that they provided, we developed an agreement for participation in an interview (see Appendix 3) and gave it to respondents if they decided to have it.

Finally, there is no place for deception in our work as we follow the principle of transparency rather than seek self-interest. We clearly understand that dishonest behavior could harm overall integrity of the work.
4. Analysis of patients’ and healthcare service providers’ perceptions

Within chapter 4, the analysis of interviews conducted with patients and healthcare service providers will be presented. The responses of patients and providers will be analyzed separately on the following points: (1) the respondent’s first associations of healthcare service quality, (2) frequently mentioned dimensions and sub-dimensions, (3) the most important dimensions and sub-dimensions for the respondent and (4) minor dimensions and sub-dimensions. As outcomes of each of the analysis (i.e. analysis of patients’ and healthcare service providers’ responses) we will reveal separately patients’ and healthcare service providers’ perceptions of healthcare service quality. The overall perception of healthcare service quality will be based on the third point above, namely the most important dimensions and sub-dimensions. Afterwards we will proceed to aligning or combining previously defined two perceptions. The final conclusion from this chapter will be an answer to our first research question.

4.1. Presentation and analysis of patients’ responses

In the current section we will present analysis of all eight respondents’ answers and overall perception of healthcare service quality from patients’ point of view.

Respondent 1

The first respondent is a female of 21 years old, a student from Sweden, Umeå University. The last time she visited the main hospital in February of 2012 for the health check in Sweden. The respondent usually visits the main hospital and does it occasionally in a case of illnesses.

- The respondent’s first associations of healthcare service quality

Regarding the first associations the respondent number one described healthcare service quality by the statement: “They [doctors, nurses] have to take into account that patients have the mind of their own and I am aware of how I feel”. During the last visit the interviewee was pleased with speed of procedures and displeased with an example of her friend’s experience that “it [information about the health condition] was very badly put from the doctor” and the patient got scared. Concerning possible improvements in the healthcare service the respondent argued that “if some serious cases come they should be dealt with first. And it is not cost efficient to keep during all night people who could be treated within one or two hour”. Making a linkage between provided responses and defined categories and dimensions from our first literature review, we could relate the respondent’s first phrase to patient-centered sub-dimension of interaction dimension, functional category as it could be perceived that she wanted to be involved into the process of decision making in terms of her health. The speed of procedures could be presented as efficiency measures sub-dimension of service process dimension. And the issues about a way of delivering of information, we decided to treat as assurance sub-dimension of interaction dimension due to its possible direction to building a feeling of safeness and emotional support from doctors. The fact that could be improved from the respondent’s point of view we identified as efficiency measures dimension of administrative category. We decided to do it as it could be perceived as an
issue of managing process of patients’ inflow and outflow that could be under administrative staff duties. However, it is a question of what people and from what departments are responsible for these tasks and could deviate from one healthcare organization to another.

- Frequently mentioned dimensions and sub-dimensions

Within provided answers the respondent rather frequently stated that doctors should take into account patients’ points of view. Thus, superior behavior of doctors could prevent the respondent from cooperation with them as she wanted to make decision by her own. Also the interviewee expected from doctors not to be superior but care about patients. The respondents willingness to be involved into the decision making process was also presented as the first association with quality.

Another often raised issue is about a way of interaction between representatives of healthcare organizations and patients. So the respondent was displeased with the example of an interaction between the patient and doctors as well as nicer attitude from nurses and receptionist sides could inspire the interviewee to cooperate with them. Moreover the respondent expressed her expectation from doctors as “I expect positive face expressions. If a doctor sits like a ghost you do not feel like asking any questions”. Low quality meeting with doctors, nurses and receptionists was described by the phrase: “if you see that a person does not care what is going on and what you are saying you will probably lose confidence in such person”.

Information is the third aspect that was discussed rather frequently. Communication issues were described by the statement: “I do not know what is going on because I am not a doctor. It is very nice to hear that it is what is going on and it is what we are going to do...” Information was presented as an ingredient of a good meeting with nurses as well: “nurses should explain what they are going to do”. Also negative effect of a long waiting time could be decreased by information from receptionists: “If they [receptionists] answer questions nicely I would probably wait around 30 minutes or 2 hours, I would feel comfortable as I would know what is going on”.

Hereby, we could detect that the respondent’s willingness to be involved into decision making process could be identified as patient-centered sub-dimension of interaction dimension. The frequency of this sub-dimension could be also supported by the phrase that “communications should be human to human. And not like authority to somebody below”. Initially it could be determined as some other type of interaction that relates to only human interaction but taking into account the flow of the interview and previous questions it could be argued that its statement could be interpreted as a consequence from patients’ involvement into decision making process. However there is still some place for discussion if it related to identified sub-dimension or now as it was our subjective interpretation.

Next sub-dimension that was discussed rather often is assurance as the respondent is very concerned with a way of interaction between her and healthcare service delivers. She expected to get feelings of trust and emotional support and simply to feel nice attitude from communication with doctors, nurses and receptionist.
Also another sub-dimension that was frequently mentioned is information so the respondent could understand what is happening in the healthcare organization. On the one hand we could say that information is needed in order to just understand what is going on in the healthcare organization. But on the other hand if we think why the respondent intends to understand its processes we could perceive it as intention to feel more confident and be aware what to expect or to feel involvement into a process. The latter note could be explained owing to the first answer provided by the respondent about her willingness to be involved into the decision-making processes and all further comments could have been made with some perspective on it.

- The most important dimensions and sub-dimensions for the respondent

Considering the first association and the most frequently mentioned sub-dimension we could conclude that for the first respondent the most important dimension is interaction dimension within functional category with emphasis on such sub-dimensions as patient-centered and assurance. Other sub-dimensions information of interaction dimension and efficiency measures of service process dimension could be perceived as less important comparing to patient-centered and assurance.

- Minor dimensions and sub-dimensions

Except previous presented aspect, the respondent touched slightly such issues as color of walls (“white walls are not comfortable, I would repaint walls”), waiting time (“I will not feel convenient to wait for 4 hours”) and doctors’ ability to present various perspectives on her health condition. These aspects were mentioned just once or have emerged only after we asked about them and were not repeated a lot of time further.

The first aspect was related to such sub-dimension as atmosphere from environmental category, the second was defined as efficiency measures dimension from administrative category. Doctors’ ability to present various perspectives could be identified as professional skills of doctors from technical category. efficiency measures.

Regarding mentioned minor dimensions, some of them could be perceived as points that could support importance of functional category. So, the respondent stated that communication could mitigate negative influence of waiting time. Also technical category, namely doctors’ professional skills was described as doctors’ ability to present various perspectives on the case that could be obviously shown through communication with a patient. Moreover it should be mentioned that the interviewee gave priority to qualification of doctors comparing to administrative side of the healthcare.

Respondent 2

The second respondent is a male of 26 years old. He is a student from Umeå University. The last visit for the district healthcare organisation occurred in December of 2011 in Sweden. He attends the healthcare occasionally.

- The respondent’s first associations of healthcare service quality

The respondent associated the healthcare service quality with an overall good system of the healthcare organization from contacting a call-center and booking a meeting with a
doctor till a visit of a hospital. It could be related to efficiency measures of administrative category. Then he explained it was important that doctors should be compassionate: “doctors should feel patients’ feelings and not be distant” and also doctors and nurses should be qualified. Qualification was described as experience or number of years in practice. So, the patient touched assurance sub-dimension of interaction dimension as he talked about that doctors should feel patients’ feelings and it could create some emotional support for patients. Professional skills dimension of technical category was presented as qualification of personnel.

During the last visit the respondent number two was pleased with doctors’ attitude. It was described as “he was really listening to me”, “he was really consulting me. I was very worried but he told me that such cases happened”. Examining provided responses we could relate them to responsiveness sub-dimension as that doctors listen to patients could be interpreted as willingness to help. Points about consulting and providing information about experience with similar cases could be treated as explanations of assurance sub-dimension as it helps to build feelings of trust for patients.

Regarding aspects that displeased the interviewee, he stressed that medicines did not help. It could be perceived as health service outcome dimension of technical category as the respondent did not achieve the result that he had expected. Also he highlighted the lack of information: “the doctor did not tell me what if the medicine would not work”. This aspect obviously could be related to information sub-dimension of interaction dimension.

Regarding the question of possible improvement the respondent suggested to have more qualified doctors. It should be pointed that importance of professional skills of healthcare service providers was possibly prioritized by the respondent due to his concern in service outcome as he has previous not rather good experience in terms of it, namely “Medicines did not solve the problem”.

- Frequently mentioned dimensions and sub-dimensions

Throughout provided responses the respondent number two was discussing a lot about qualification of healthcare service providers. First it was mentioned within the first associations. Then later the respondent told that “there should be more qualified doctors.” Discussing high quality meetings with providers, he pointed that “nurses should be competent” and straight forward added that “they should wear gloves” and also doctors should also be well qualified.

Another aspect that rather often emerged within answers is communication. It was answered to be “a very vital part” as it was explained that “if the way they [healthcare service providers] interact with you is nice then I think half of sickness goes away”. Several times the respondent stressed that “if a doctor is confident then a patient is confident and feeling much better”, “doctors should be solid” and “nurses and administrative staff should be confident”, “if doctor is not confident in prescribing it could prevent from cooperation”. Moreover also the respondent expected doctors to be good to him and “they [doctors] should be helpful instead of being distanced”. Also within the discussion about communication the interviewee told that “if nurses, doctors are not compassionate enough or they do not feel you then you are not going to feel
good”, “receptionist did not have emotions and I was feeling bad”. Communication was named by the respondent as a factor for mitigating negative effect of long waiting time.

Analyzing responses according to predefined categories from the first literature review, the second respondent stressed the importance of doctors’, nurses’ and receptionists’ qualifications that relates to professional skills of technical category. We argue that this emphasis was made by two ways. The first way is direct statements of importance of qualifications. The second way was through expressing indirect description of qualification of healthcare service providers that doctors, nurses and receptionist should be confident and solid. We made such link owing to the flow of the interview and previously discussed issues that related to the problem that medicines did not help and that hospitals should have more qualified doctors. Hereby, we could say that the respondent utilized assurance sub-dimension for describing professional skills sub-dimension. Additionally we could say that professional skills were described by utilizing tangible quality dimension, namely the note about gloves for nurses and by the statement that “doctors should explain what do to if it [medicine] does not work” and that doctors should ask questions about patients’ health (could be interpreted as willingness to help). The latter notes relate to information and responsiveness sub-dimensions, respectively. They could be related to description of qualification as it could be seen as a consequence of that medicine did not help to the respondent and he assumed that it could be due to lack of qualification of his doctor. So, we could state that the respondent utilize functional category, namely assurance, information and responsiveness sub-dimensions from interaction dimension for describing qualification of healthcare service providers.

Coming back to frequently mentioned aspects of communication, we also could highlight that some functional aspects such as helpfulness, compassion, emotions of personnel were used for describing just communication but not qualification. This aspects could be defined as responsiveness and assurance sub-dimensions. Therefore, we suggest stressing interaction dimension in terms of describing professional skills as another frequent mentioned.

Other frequently discussed aspects related to organization of healthcare services. They were presented as availability of call-centers, convenient system of booking appointments, way of filtering patients as well as waiting time. So, we could refer these issues to efficiency measures of administrative category.

- The most important dimensions and sub-dimensions for the respondent

Taking into account previously discussed dimensions and sub-dimensions, we could propose to perceive interaction dimension of functional category as the most important as it was mentioned within two previous points of analysis. The most important sub-dimensions are assurance and information. Professional skills dimension could be presented as another important aspect but the respondent mainly assess this feature from functional side then we will consider only previously mentioned two sub-dimensions. Another important aspect is administrative category, namely efficiency measures.

Within the second priority we could list service outcome dimension of technical category and responsiveness sub-dimension of interaction dimension as the first was
mentioned only within the first associations while the second only within the most frequently mentioned.

- **Minor dimensions and sub-dimensions**

Besides previously analyzed dimensions and sub-dimensions that were determined to be mostly essential for the providers, we could listed several additional aspects that were mentioned by the respondent as well but were not indentified to be the most important.

For example “Doct\ors should check me in a thorough manner, should ask questions”, this statement could be interpreted as doctors should communicate in such a way so all required procedures are fulfilled, consequently it could be related to efficient measures sub-dimension, service process of functional category. Also as a consequence of the experience that medicines did not help, the respondent told that “there should me more test to diagnose a person” and that time for waiting should be reduced (“I was waiting for 1 hour and time took to diagnose me was short 5 minutes”). These two raised aspects could be defined as tangible quality dimension of technical category, efficiency measures dimension of administrative category, and efficiency sub-dimension of interaction dimension, respectively

Moreover, among minor aspects there were mentioned an issue as “more healthcare centers in nearest location” and that in the hospital “everything should be clean”. So, presented statements could be attributed to environmental category, namely location and atmosphere (i.e. cleanness) dimensions.

Another aspect that was pointed by the second respondent that does not relate to categories of healthcare service quality but is important for the part about healthcare services itself is that he stated that “healthcare differs from other services” by stressing that “they [healthcare service providers] should be helpful instead of being distanced comparing to supermarket”. So, these phrases support previously discussed within the first literature review issue that healthcare is rather specific case of general service industry.

**Respondent 3**

The third respondent is a male of 22 years old. Currently, he is studying and working in Sweden. He attends the main hospital in Umeå two times each month. Last time he visited the main hospital in March 2012.

- **The respondent’s first associations of healthcare service quality**

Regarding the respondent number three, he argued that “all needed information should be provided”; “personnel should understand the problems”, “pay enough attention and treat individually”; “personnel should be interested in helping”; “different clinical services should be located in one place”. Thus, the first ideas and thoughts in terms of healthcare quality touched sub-dimensions such as information, empathy and responsiveness as well as infrastructure correspondingly.
- Frequently mentioned dimensions and sub-dimensions

The respondent stressed several times that an approach to the patient should be individual and friendly. The respondent stated that “friendly way of communication is the first step for building trust”. Another frequently stated issue relates to administration work. According to the respondent “receptionists should give easy access and navigation within the healthcare process, for example provide interpreter who could make this process less complex for the respondent”. Also the interviewee stressed the importance of his participation in decision-making about his treatment which means that “a doctor and a patient try to find some agreement”. At last, the respondent mentioned the importance of professionalism several times by describing it by such phrases as “Personnel should understand all my problems”; “Doctors must treat me in authoritative way, which means that they should be confident but not too much and tough about their decisions”; “I expect doctors have experience and high qualification”.

So, friendly way of interaction relates to assurance sub-dimension and individualized care to empathy sub-dimension. Receptionist work could be attributed to the administrative category, namely access dimension. Participation in decision-making is patient-centered sub-dimension. The last concern, namely professional skills was identified as the way a person behaves and communicates. The last phrase is considered to be too general as information about experience and qualification is difficult to acquire by patients. So, we can regard this issue as reliability sub-dimension.

- The most important dimensions and sub-dimensions for the respondent

Thus, among important sub-dimensions and dimensions we can identify those that came to respondents’ mind at first time. These dimensions are information, empathy, responsiveness and infrastructure. Moreover, empathy sub-dimension was mentioned several times so this sub-dimension is considered to be of higher importance. Other sub-dimensions and dimensions that were mentioned several times during the interview are also consider to be of the second priority, namely access dimension (administrative category), patient-centered sub-dimension, reliability sub-dimension and assurance sub-dimension.

- Minor dimensions and sub-dimensions

Among minor issues we can distinguish those that were not brought by respondent unless we asked about them directly. The respondent said that the waiting time should not be too long (efficiency measures) and some additional service could be helpful during the waiting time.

Respondent 4

The respondent number four is a female of 21 years old. She is a student from Russia and attends healthcare organization 2-3 times a year. Last time she visited the main hospital in January 2012 in Russia.
Initially the respondent came up with following issues that she thought could be related to quality in the healthcare: “service providers should be friendly and show that they care about patient”; “doctors make concrete diagnosis without any doubts and hesitations and consulting with colleagues, answer all questions, explain causes of illness, so basically all processes go smoothly without repeating and delays.”; “nurses make all procedures accurately”; “receptionists are flexible when agreeing time with patient (search all possible ways to arrange the meeting in appropriate time)” “I would like easy and fast access to personnel (waiting time is minimum and no postponing of meetings and procedures)”“administration is fully responsible for the patient (long waiting time and delays could influence patient’s decision to stay in healthcare organization and no extra service could mitigate it)”.

First issue relates to the **assurance sub-dimension** as friendly and caring behavior ensures feeling of trust. The second issue was connected by the respondent to the **professional skills dimension**. However identified indicators of professionalism are not necessarily direct. They could be more related to interaction dimension of the quality, namely to **reliability sub-dimension** and to **service process dimension**, namely **efficiency measures sub-dimension**. Reliability sub-dimension means how service was provided which corresponds to the respondent’s second statement. Efficiency measures sub-dimension also fits the statement as it is important for the respondent that everything goes smoothly without interruptions and delays. The third consideration points to **reliability sub-dimension** as well as to **professional skills sub-dimension**. The respondent explained that he had previous experience with nurses and it is quite easy to judge their work as the results could be seen right away. For example, the quality of the process of making blood tests or injections could be assessed by its safeness, speed and to what extent it harms and cause pain. However, it should be pointed that previous experience of the respondent does not affect our analysis but just inform us that the interviewee could assess quality of medical procedures to some extent. The fourth issue is attributed with **responsiveness sub-dimension** and **patient-centered sub-dimension** as well as **efficiency measures dimension (administrative category)**.

**Frequently mentioned dimensions and sub-dimensions**

The most frequently mentioned issue was qualification and professionalism of doctors and all personnel. Then, the respondent frequently expressed interest in interaction issues. They were described by the respondent as: “Personnel ask about you, your history of illness”; “Doctors make recommendations, offer to fill in information forms”; “They have individualized approach instead of doing just routine work”; “Personnel be friendly and show you that they care about you”; “Everyone is friendly and smiling and giving you right info”.

Concerning the doctors’ qualification and professionalism it could be rather difficult to give an adequate evaluation during interaction without special knowledge of the field. However, still in terms of doctors, nurses and receptionists we argue that the respondent’s statement relates to **reliability sub-dimension (interaction dimension)** and not to professional skills dimension because there is always the space for bias due to certain circumstances. As for the interaction issues, frequently stated sub-dimension is **empathy sub-dimension** as well as **assurance sub-dimension**. Also the fourth issue
discussed within ‘The first respondent’s associations of healthcare service quality’ part was mentioned several times by respondent, so responsiveness sub-dimension, patient-centered sub-dimension and efficiency measures dimension are frequently mentioned dimensions.

- The most important dimensions and sub-dimensions for the respondent

Hereby, the respondent mentioned a lot of sub-dimensions of interaction dimension, namely assurance, reliability, responsiveness and patient-centered sub-dimensions. These dimensions relate to the ideas and thoughts about quality in healthcare that respondent brought by herself for a discussion. Also these dimensions were touched several times during the interview, so the respondent made them more convincing and solid. Other presented by the respondent sub-dimensions and dimensions are efficiency measures sub-dimension in service process dimension and efficiency measures dimension in administrative category. Efficiency measures dimension in administrative category was also stated several times and this points to its high importance.

The second priority of importance could be given to such aspects as empathy sub-dimension of interaction dimension and efficiency measures sub-dimension of service process dimension

- Minor dimensions and sub-dimensions

Environmental category and its dimensions were regarded as not very essential and the respondent only stated that she would prefer more light, coffee machines and overall relaxing environment (atmosphere and infrastructure dimensions).

Respondent 5

The respondent number five is a male of 32 years old. He has some work experience but currently he is a student in Sweden, Umeå. The respondent visited the main hospital in March of 2012. He visits the healthcare rather often due to his children health problems.

- The respondent’s first associations of healthcare service quality

The respondent number five stated the first associations as “I don’t like queues in hospitals, especially in emergency”. This phrase could be related to efficiency measures dimension of administrative category. Then he added that “I appreciate qualification of doctors first of all and not only doctors”. According to the point about qualification of healthcare personnel we detected some additional information within other answers. Thus, the fifth respondent associated qualification of doctors with their experience and education. But also he mentioned that he did not ask doctors about their education but “it can be easy defined by their behavior, diagnoses”. We could say that this point could be referred to functional category. Qualification of nurses and receptionist was defined as a way of communication and their ability to fulfill their duties correctly: “Nurses and receptionist should be polite, correct in their paper work and technical devices”. However the respondent mentioned that it is hard to assess qualification of nurses and receptionist. So, qualification could be identified mainly by assurance sub-dimension as it could be interpreted as a way of behavior and delivering
information about diagnoses that will persuade patients about good qualification or build feelings of trust in spite of initially the respondent stated directly professional dimension of technical category.

The third association was about attitude of healthcare personal: “Personnel should smile, be polite”. It could be defined as interaction dimension, namely assurance, functional category.

During the last visit to the hospital the respondent five was pleased with technical equipment that a process of blood testing was not painful and that children were given small toys after completing medical procedures. On the other hand he was displeased with long waiting time. So, we could derive two dimensions of technical category, namely tangible quality dimension (i.e. equipment) health service outcome dimension (i.e. painless procedures) and assurance sub-dimension (i.e. emotional support to children) of interaction dimension, functional category.

Also the respondent number five suggested increasing amount of qualified doctors (”it takes maybe 30 minutes to visit a doctor and he suggests just common staff”). It is professional skills dimension of technical category.

- Frequently mentioned dimensions and sub-dimensions

The most frequently detected dimension within answers of the fifth respondent is qualification of healthcare service providers. Within the first answers the respondent raised the issue about qualification of medical personnel. The respondent connected communication and qualification of doctors by saying that “I can make some kind of picture about that person qualification when he is stating his opinion […] how he defines words, special terminology”, ” if he [doctor] explains disease well and understand this disease”. A poor qualification of doctors, nurses is a fact that could prevent the interviewee from cooperation with them. Also the respondent stated that he expected that “doctors should be well-qualified otherwise it is hopeless”. Also it was mentioned by the interviewee that “doctors did not know the disease and he took the book and checked it. I mean it is not acceptable when doctors check a book in front of visitors”. Qualification of nurses and receptionist was defined by their politeness to patients (“nurses and receptionist should be polite”).

Hereby, examining received responses we could stress professional skills dimension. But the respondent utilized other aspect for its describing. Overall we could say that the great deal of the interviewee’s statements defining qualification of healthcare personal could be related to interaction dimension of functional category. Regarding the most frequently mentioned sub-dimension within the specified dimension we could list the following. One of aspects is assurance sub-dimension that could be interpreted as how doctors express their opinions, define words and behave so a patient could be confident in their qualification. Then we could mention efficiency sub-dimension or time spend on a patient so the respondent expected within the visit to receive not common suggestion, so we could argue that doctors should extend the time spending for a patient or it is a matter of professional skills or experience. The latter issue was presented as the last discussed issue at the previous part of the respondent’s responses analysis (i.e. “it takes maybe 30 minutes to visit a doctor and he suggests just common staff”). As patients usually cannot assess doctors medical skills straight forward unless patients
have specific knowledge in its field, we do not take into account the matter of doctors’ skills or experience. Additionally we could highlight such the respondent’s phrases that “I always try to discuss some alternative methods” and that he took into account “how doctors explain a disease”. So, we could argue that these aspects could be linked to information sub-dimension of interaction dimension. And it could correspond to explanation of physicians’ qualification.

The second place in frequency of mentioning could be given to equipments. The respondent told healthcare personal should be able to use equipments in an accurate way. Also he liked equipments within the last visit to the hospital. The respondent expected that hospitals possessed appropriate equipments. It could be identified as technical category. But as for patients it could be rather complex to define if equipments are utilized in a right way we will not consider this dimension. Also rather often the respondent was talking about waiting time. It was the very first associations. Then it was repeated within issues that displeased him. Also the respondent expected to receive fast healthcare services without queues. So, we could pay some attention to efficiency measures dimension of administrative category.

- The most important dimensions and sub-dimensions for the respondent

Considering first association and frequency of mentioning, professional skills dimension of technical category could be highlighted as the most important for the fifth respondent. But since the respondent utilized mainly interaction dimension for explaining qualification, this dimension will be treated as the most important instead of the initially mentioned.

Making a decision about the most important sub-dimension within interaction dimension we could stress assurance. Other sub-dimension such as efficiency and information are less important but still vital for a good quality of healthcare service.

Interaction dimension was presented in terms of explaining how the respondent perceives qualification of healthcare personnel of all healthcare service providers. However among healthcare personnel the respondent emphasized the role of doctors comparing to receptionist by such phrase as “receptionist is not the person that gives what you want, it is intermediate person between you and a doctor”. Also importance of qualification of doctors and as a consequence importance of interaction dimension could be supported by the statement that “qualification of doctors is more important than personnel [administrative]” that was provided when we were comparing what category technical or administrative could be more essential for the respondent. Regarding specific sub-dimension within interaction dimension we could select such as assurance, efficiency and information.

Another the most importance dimension is efficiency measures (i.e. waiting times) of administrative category.

- Minor dimensions and sub-dimensions

Within provided answers the fifth interviewee mentioned some issues that are not as vital as previous but also have rights for existing. Thus availability of TV-set, kid-places was mentioned. It could be presented as environment category, namely infrastructure.
It should be mentioned that it was defined by the respondent as not very important but it could have some positive affect during waiting time. Also the respondent mentioned that places should be clean so it relates to atmosphere dimension of environment category. Also another aspect that could be mentioned as a minor is that receptionists should be more directed to help patients as “when I try to explain to them [receptionists] that I have an emergency situation, they try to explain that there is no enough staff”. So, it could be depicted as responsiveness sub-dimension of interaction dimension.

Respondent 6

The sixth respondent is male of 25 years old. He is a PhD student at Umeå University and attends healthcare organization 1-2 times in a year. The last time he attended the district medical center in March of 2012 in Umeå.

- The respondent’s first associations of healthcare service quality

When the respondent was asked about his understanding of quality in healthcare, he described it by the following statement: “Every procedure should bring help and some result”. He also added that: “Nice behavior is not important unless treatment helps”. Thus, the respondent tried to highlight only one healthcare service outcome dimension. In terms of doctors it is quite difficult to assess the results of the treatment without additional knowledge in the field. Some treatment processes could be really complex and long depending on the kind of disease and some small improvements could be not noticed or disregarded as important. Thus, quality evaluation could be easily overestimated or underestimated. So, we relate this dimension to reliability sub-dimension as interaction here could be perceived to be a major factor that influences the respondent’s quality perception.

- Frequently mentioned dimensions and sub-dimensions

The priority of the results in a treatment process was stressed along with professionalism of doctors. It was said that: “Confident way of behavior, reasonable suggestions and prescriptions (that could be checked using Internet) are ingredients of professionalism of doctors. Receptionists should be organized and exact about waiting time.” Another frequently presented consideration relates to administrative work. It was described in the following manner: “Waiting time should be reasonable and procedure for booking appointment should be easy. Waiting list should be organized by giving priority to patients with emergency problems. Additional services can mitigate negative effect of waiting time to certain extant.” Interaction issues were presented several times meaning that “Doctors should pay enough attention to patients and make all possible tests”; “Nurses should be polite and friendly”.

Thus, healthcare service outcome dimension was mentioned many times during the interview as well as professional skills dimension but that also could bring doubts in terms of perceiving doctors’ qualification. Thus, we relate the assertion about doctors’ qualification and results of treatment to reliability sub-dimension because reasonable suggestions could be identified and related to professional skills dimension only in terms of patients’ specific knowledge in the medical field. Also it should be pointed that internet is considered to be doubtful source of this knowledge for valuable assessment of medical suggestions. The opinion about administration work relates to efficiency
measures dimension (administrative category). Interaction issues points to the efficiency sub-dimension and assurance sub-dimension though it was related only to nurses.

- The most important dimensions and sub-dimensions for the respondent

Thus the most important dimension according to the respondent is reliability sub-dimension in terms of doctors as it was brought by the respondent in the beginning of the interview and then was repeated several times. Other less important dimensions that were mentioned several times are efficiency measures dimension (administrative category), efficiency sub-dimension and assurance sub-dimension.

- Minor dimensions and sub-dimensions

Among minor dimensions brought by us for the discussion the respondent highlighted infrastructure dimension, stating that such technology as Wi-Fi should be provided by a healthcare organization. When the respondent was asked about location and atmosphere dimensions the answer was that it could influence his perception of healthcare service quality if it is good. However if the person is sick then the interviewee told that environment category and all its dimensions could be disregarded.

Respondent 7

The respondent number seven is a female of 54 years old from Russia. She is currently unemployed and visit healthcare organization 5-6 times in a year. The last time she visited the main hospital in March 2012 in Russia.

- The respondent’s first associations of healthcare service quality

On the first question about her view on quality in healthcare, the respondent answered that qualification of doctors is the most essential aspect that relates to the correct diagnostics etc. Follow-up questions revealed that the respondent associated qualification with situation when patient’s description of the symptoms match doctor’s description. Thus, respondent stresses the importance of professional skills dimension. However, we must relate respondent’s association to interaction dimension namely to reliability sub-dimension as additional knowledge in the field is required to give an adequate assessment of the professional skills and competences.

- Frequently mentioned dimensions and sub-dimensions

The importance of professionalism and qualification were mentioned one more time strengthened by following phrase during the interview: “It is easy to distinguish professionalism observing behavior of the doctor, his attitude and the way he communicate with patients”. The respondent expressed her concern about the time spend on a patient and speed of procedures: “Reasonable time should be spent on each patient”; “Everything should be done fast but at the same time carefully”. Then, the respondent expressed her desire to be treated “politely”, “cautiously and with respect” during her communication with personnel. She argued that: “Only personal qualities of doctors and other personnel could inspire me to cooperate with them” One more concern for the respondent was information. The respondent said that she expected all
needed information would be provided especially in terms of waiting time and clinical routine.

Hereby, professional skills dimension or rather reliability sub-dimension (as we refer to it) was mentioned several times. Also, time concerns attributed to efficiency sub-dimension. Communication expectations of the respondent could be related to the assurance sub-dimension. The last expressed issue directly refers to information sub-dimension.

- The most important dimensions and sub-dimensions for the respondent

So, the most essential sub-dimension for the respondent is reliability sub-dimension that was mentioned as first association and then several times during the interview. Efficiency, assurance and information sub-dimensions that were frequently mentioned sub-dimensions we can regard as the second in priority.

- Minor dimensions and sub-dimensions

The respondent slightly noticed that the way person looks (neat and clean) could influence his assessment of doctor’s professionalism and overall communication. So, dimension that was mentioned is tangible concern dimension.

Respondent 8

The respondent number eight is a female of 71 years old. She is retired person from Russia. Last time the respondent visited the district hospital in November of 2011. She usually goes to the hospital once a year for the health control in Russia.

- The respondent’s first associations of healthcare service quality

Initially the eighth respondent described her first associations of healthcare service quality as “good healthcare service should embrace more tests and examinations for my illness and coexisting diseases”. Also she told that doctors should listen to her carefully and be more patient and attentive. Regarding nurses, the interviewee appreciated their attentiveness while receptionist should provide good telephone service for booking appointments.

Hence, we could detect that the respondent initially associated quality of the healthcare service with tangible dimension (i.e. tests and examinations). Also it was mentioned that doctors, nurses as well as receptionists should be attentive and carefully listen to patients. Thus it could be defined as responsiveness sub-dimension of interaction dimension, functional category, as attentiveness could be interpreted as healthcare service providers’ indicator of willingness to provide help. A service of telephone booking could be presented as access dimension of administrative category.

During the last visit the eighth respondent was displeased with wrong information and unfriendly attitude that she got from the reception and missed the appointment with the doctor due to it. But later an apology for disinformation and attentive and nice approach to the respondent from the receptionist amended her negative experience from previous
rudeness. Also the interviewee suggested improving a way of getting to the appointment to doctors from receptionists side.

So, linking expressed opinions and the predefined healthcare service categories, the respondent touched information and assurance (i.e. willingness to have attentive and friendly attitude from healthcare service providers) sub-dimensions of interaction dimension. Moreover the respondent emphasized that good attitude is important for her as it could mitigate negative previous experience. Another aspect that was raised is better access to doctors that could be interpreted as access dimension of administrative category.

- Frequently mentioned dimensions and sub-dimensions

One of the most frequently highlighted aspects is information. First the interviewee mentioned it within the first associations. Then in order to be able to cooperate with nurses the respondent should explain everything. Also on the question about expectations from nurses and receptionists the respondent replied that “nurses should explain everything what they are going to do and what they are doing” and “receptionists should correctly provide information”. Communications aspect was expressed through receiving information, namely “I like when physicians suggest additional treatment”.

Scrutinizing presented responses we could detect information sub-dimension of interaction dimension as rather frequently listed issue.

Also the interviewee presented rather strong concern about a way of communication between patients and healthcare service providers. So, within the first associations the respondent triggered discussion about on the one hand nice and on the other hand unfriendly way of interaction from receptionists. Later the interviewee told that she expected from nurses to be kind. Thus, we suggested relating these aspects to assurance sub-dimension of interaction dimension.

- The most important dimensions and sub-dimensions for the respondent

Regarding provided responses we can detect the most important dimensions or sub-dimensions such as information and assurance sub-dimension of interaction dimension, functional category as they were mentioned within the first associations as well as among frequently mentioned.

Less important aspects could be identified as tangible dimension of technical category and interaction dimension, namely responsiveness sub-dimension of functional category and access dimension of administrative category. However, we decided not to incorporate technical category as it cannot be adequately assess by patients without specific knowledge.

- Minor dimensions and sub-dimensions

Issues that were mentioned just once are experience of doctors explained as amount years in practice (professional skills dimension of technical category), reasonable amount of time that doctors spend for a meeting with patients (efficiency sub-
dimension of interaction dimension, functional category). Also the respondent told that building should be appropriate, rooms should be big. It could be attributed to atmosphere dimension of environmental categories. It should be mentioned that they were raised within responses only after we have asked directly about them. Also it was pointed that effect of these factors did not affect the interviewee communication with healthcare personnel to a great extent. So, we could argue that these categories are not so important comparing to aspect discussed within previous point of the respondent’s answers analysis.

**Overall patients’ perception of healthcare service quality**

After conducted analysis of the responses provided by our eight interviewees we highlighted the most important dimensions and sub-dimensions for each of the respondents. On the bases of the received list of the most vital aspects of the healthcare service quality we could develop overall patients’ perception of healthcare service quality.

Table 7. Patients’ list of important dimensions and sub-dimensions.

<table>
<thead>
<tr>
<th>Patients</th>
<th>First priority</th>
<th>Second priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient 1</td>
<td>- patient-centered s-d.</td>
<td>interaction d., functional category</td>
</tr>
<tr>
<td></td>
<td>- assurance s-d.</td>
<td>- efficiency measures d.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- information</td>
</tr>
<tr>
<td></td>
<td></td>
<td>service process d., functional category</td>
</tr>
<tr>
<td></td>
<td></td>
<td>interaction d., functional category</td>
</tr>
<tr>
<td>Patient 2</td>
<td>- assurance s-d.</td>
<td>interaction d., functional category</td>
</tr>
<tr>
<td></td>
<td>- information s-d.</td>
<td>- service outcome d.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- responsiveness s-d.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>technical category</td>
</tr>
<tr>
<td></td>
<td></td>
<td>interaction d., functional category</td>
</tr>
<tr>
<td></td>
<td>- efficiency measures d.</td>
<td>administrative category</td>
</tr>
<tr>
<td>Patient 3</td>
<td>- empathy s-d.</td>
<td>interaction d., functional category</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- patient-centered s-d.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- reliability s-d.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- assurance s-d.</td>
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<td></td>
<td></td>
<td>- responsiveness s-d.</td>
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<td></td>
<td></td>
<td>- information s-d.</td>
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<td></td>
<td></td>
<td>- access d.</td>
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<td></td>
<td></td>
<td>administrative category</td>
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<tr>
<td></td>
<td></td>
<td>- infrastructure d.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>environmental category</td>
</tr>
<tr>
<td>Patient 4</td>
<td>- assurance s-d.</td>
<td>interaction d., functional category</td>
</tr>
<tr>
<td></td>
<td>- reliability s-d.</td>
<td>- empathy s-d.</td>
</tr>
<tr>
<td></td>
<td>- responsiveness s-d.</td>
<td>interaction d., functional category</td>
</tr>
<tr>
<td></td>
<td>- patient-centered s-d.</td>
<td>- efficiency measures d.</td>
</tr>
<tr>
<td></td>
<td>- efficiency measures d.</td>
<td>service process d., functional category</td>
</tr>
<tr>
<td></td>
<td>administrative category</td>
<td></td>
</tr>
<tr>
<td>Patient 5</td>
<td>- assurance s-d.</td>
<td>interaction d., functional category</td>
</tr>
<tr>
<td></td>
<td>- efficiency measures</td>
<td>- efficiency s-d.</td>
</tr>
<tr>
<td></td>
<td>administrative category</td>
<td>interaction d., functional category</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- information s-d.</td>
</tr>
</tbody>
</table>
First of all, it was discovered that within healthcare service quality aspects of the first priority of importance, all respondents mentioned interaction dimension of functional category. Concerning sub-dimensions of this dimension, we could notice that all of them were listed except access and efficiency sub-dimensions (see Table 7). However we should specify that respondents number two, three, four, five, six and seven used interaction dimension for the purpose of explaining professional skills. Also the respondent number six utilized interaction dimension to explain health service outcome dimensions of technical category. Even though technical category was mentioned by interviewees directly or indirectly, we could argue that for patients it could be rather challenging to identify and assess quality of medical procedures, outcomes and skills straight forward unless they have specific knowledge. We could trace that the most of respondents utilized the indirect way of explaining their concern about technical category, namely presenting examples from interaction dimension of functional category of quality (e.g. confidence in behavior and in making diagnoses etc.). Indisputably, technical category could be perceived to be essential for a high quality of healthcare service and obviously patients expect to deal with very qualified medical personnel. But in the case of patients’ perception of healthcare service quality we would concentrate more on interaction dimension as an indicator of technical aspects and specific professional skills concerns. Regarding the second priority of importance, we could observe that interaction dimension was touched by all respondents except one.

So, we could argue that interaction dimension could play rather influential role in building patients’ perception of healthcare service quality. It was supported by findings from aspects of healthcare service quality of the first and the second priority of importance. Concerning sub-dimensions of interaction dimension, the most important were defined by respondents as reliability, responsiveness, assurance, empathy, patient-centered and information. Patients’ perception of healthcare service quality could be supplemented by such aspect as efficiency measures dimension (administrative category).

Healthcare service quality aspects that were mentioned only within the second priority of importance could be considered to perform a supporting role. Among such aspects we could list access dimension (administrative category), service outcome and tangible quality (both dimensions of technical category), efficiency sub-dimension of interaction dimension.
Hereby, we could argue that patients perceive healthcare service quality as interaction between them and healthcare service providers from different perspectives of this communication. Also quality perception could be supported by some additional aspects in order to receive more comprehensive perception of healthcare service quality.

Taking into account various responses we could suppose that most of reviewed patients express professional skills and qualification of healthcare service through interaction between providers and patients. The main role within healthcare service quality was attributed to doctors while nurses and receptionists were considered to be supplementary but not less important. Concerning the case of some new categories that are not listed within the developed list in the first literature review, we did not detect any within analyzed interviews. There could be several arguments for an absence of new categories. First, we suppose that predefined categories as well as dimensions and sub-dimensions are rather broad and could involve a great deal of various aspects. Hereby it is rather difficult to discover something new. If we have applied more specific sub-dimensions that would have included only few specific aspects then we probably would have been able to highlight some new sub-dimensions. Another reason for it could be defined as types of questions within conducted interviews. If we have constructed questions utilizing another wording or put then in another sequence then possibly it would have provoked respondents to remind some other not previously discussed within the first literature review dimensions and sub-dimensions of healthcare service quality.

Comparing findings from the first literature review and outcomes from the empirical study in terms of patients’ perception of healthcare service quality, we could argue that they are rather similar. First of all, our empirical findings supports ideas that functional category and namely interaction dimension is important for patients. Similar idea was expressed by Jun et al. (1998) that interaction dimension was important for patients. Concerning Jun et al. (1998) aspects such as reliability, communication, understanding customers and collaboration that could correspond to almost all our predefined sub-dimensions (except access and efficiency), all of them were identified by our empirical study to be the most important for patients’ perception of healthcare service quality.

Our empirical outcomes go in line with Fröjd et al. (2011, p. 233) findings about importance of such sub-dimensions as patient-centered and information of interaction dimension. Comparing evidences of information and patient-centered sub-dimensions’ importance within our received results, patients were more concerned with information. Hereby we could argue that our study could supplement previous research that information sub-dimension could be perceived as more important than patient-centered. The study of Jun et al. (1998) as well as our empirical study discussed tangible quality of technical category. However within our findings it was touched by only one respondent.

Also we could state that our empirical study depicted patients’ concern about access dimension of administrative category that was touched by Owusu-Frimpong et al. (2010, pp. 212, 216) and Miranda et al. (2010, pp. 2145-2147). However our research showed that only two patients attributed access dimension to important aspects of healthcare service quality, particularly to the second priority of importance and one respondent mentioned it within minor dimensions and sub-dimensions. So, our study can support previous researches that patients consider this dimension but we cannot
define to what extent it is vital for patients’ perception of healthcare service quality. For its purpose more respondents should be interviewed.

Also, we noticed that even if patients have considered technical category to be rather vital for quality they did not describe it from technical point of view but utilized functional category and its components for explaining it. This finding corresponds to the fact from the literature review that patients cannot assess quality of healthcare service in terms of technical side.

Taking into account possible contextual effect of respondents’ specific characteristics, previous experiences and other issues we could suppose that they did not affect patients’ perception of important general aspects of healthcare service quality as all respondents stressed significance of interaction process between them and healthcare service providers. However if we scrutinize some specific aspects of healthcare service quality we could detect some influence of contexts. For example the respondent number five has children and he was pleased with the fact that his children were given small toys after they have went through some medical procedures. Also the second respondent probably began to worry about professional skills of physicians and additional information such as alternative way of treatment owing to his previous experience that prescribed medicines have not helped him. So, it could be interesting for further researchers to study patients’ perception of healthcare service quality in terms of specific patients’ context if they are interested in managing healthcare service quality for a specific group of patients who relate to the same context for instance.

### 4.2. Presentation and analysis of healthcare service providers’ responses

Within the section we present analysis of all 7 respondents’ answers and overall perception of healthcare service quality from healthcare service providers’ point of view.

**Healthcare service provider 1**

The first healthcare provider is a female of 51 years old. She is logopedist from a Russian hospital. The respondent is working in the healthcare field for 25 years.

- *The respondent’s first associations of healthcare service quality*

Initially the respondent associated healthcare service quality with her qualification in a combination with modern medical achievements and technological infrastructure. Qualification was defined as “professional knowledge, utilizing medical methodological approaches toward patients, attendance of seminars”. Hereby, these associations could be defined as **technical category** of healthcare service quality and **tangible** (i.e. attendance of seminars) and **professional skills sub-dimensions**.

- *Frequently mentioned dimensions and sub-dimensions*

Regarding the most frequently mentioned aspects of healthcare service quality, we detected one as providing information to patients. It was stated that during the meeting with patients “Physicians should explain to patients their conditions through all possible ways”, “…explain all pro and cons of their conditions”. Regarding an
involvement of patients into a process of treatment, the respondent said that first of all patients should be “informed that only exact fulfillment of physicians’ requirements could bring good results”. Within additional factors that emerged within the interview, the respondent told that “patients should be pre-informed about diseases”. Moreover the aspect of providing information was stressed within discussion of environmental issues of the hospital building that “there should be available information brochures about medicines and most spread disease at various hall in the hospital”.

All listed statements could be treated as information sub-dimension of interaction dimension. It could be revealed that content of information relates to issues about technical side of quality, mainly about diseases, ways of their treatment and everything that deals with it. Moreover examining some connections between respondents’ answers we discovered that information that physicians provide to patients could assist in building feelings of trust between them as it was detected by follow-up questions that additional explanation could help in persuading to follow the prescriptions or it could be interpreted as possibility to build trust between patients and doctors.

Trust is another aspect of healthcare service quality that could be derived from the responses. It was stated that within the meeting patients should follow such approach as “if you come to a doctor you should trust and stay with him”. Also it was mentioned that “lack of trust in a physician could negatively affect a process of treatment”. Additional aspect that could help to achieve good result of treatment was defined as trust as well: “patients should trust physicians. It is the most important”. Hence, we could propose to define a building of feelings of trust between patients and doctors as assurance sub-dimension of interaction dimension.

The third point presented by the respondent is qualification of physicians. It was expressed that “all types of physicians should be qualified as all of them should be involved into a process of curing patients” so it could improve quality of healthcare service. In order to conduct a high quality meeting with a patient “physicians should deliver healthcare service in terms of this knowledge, qualification in order to improve health of patients”. Moreover concerns about qualification were touched within the first associations as well. So, the last aspect obviously is professional skills dimensions of technical category. And the respondent assessed it from technical side as she is a representative of healthcare personnel and possesses required knowledge for it.

- The most important dimensions and sub-dimensions for the respondent

Comparing two points of the analysis of answers the first respondent’s answers, namely the first associations and frequency, we could suggest considering qualification that relates to technical category, namely professional skills dimension as the most important as it was the first association and also rather often was repeated within provided responses.

Other important sub-dimensions could be identified as information and assurance within interaction dimension of functional category of healthcare service quality. It could be rather difficult to determine which of these two sub-dimensions is more important as they are interconnected is. However, we suppose that information could be perceived as more essential as it was mentioned more often comparing to feelings of trust. And also information was mentioned not only as a way of building trust but also
for example as a part of environment (e.g. information brochures about medicines, the most spread diseases available at the hospital) in a healthcare organization, a way of protecting a process of treatment from patients’ negative effect on it and others. But according to the strategy of analysis, both information and assurance are treated equally important.

- **Minor dimensions and sub-dimensions**

Except already discussed aspect of healthcare service quality, the respondent also touched such aspect as availability of narrowly focused specialists as an additional factor for achieving a high quality of the healthcare service. Within presented points of a patient-centered approach, there was an issue about accurate defined diagnoses. Lack of tests that could reveal coexisting illnesses and treatment interruptions by patients’ initiative were listed as possible issues that could negatively affect healthcare service quality. If we analyze them more thoroughly we could suppose that coexisting illnesses could be related to *professional skills dimension* as well as it could be interpreted as ability of physicians to detect such illnesses. And interruption of treatment could be perceived as *patients-centered dimension* as it could be explained as patients’ involvement into a process of treatment and understanding that its interruption could prevent them from achieving good outcome. Also the respondent mentioned financial possibilities of patients to be able to afford medical service. It could be related to *access sub-dimension* of service process dimension, functional category. So, we could notice that some minor sub-dimensions and dimensions could support importance of interaction and professional skills dimensions.

Moreover the respondent pointed that environmental aspects (i.e. “hospitals should look appropriate”) could be taken into account to some extent but only in a combination with communication with healthcare service providers and quality of service provided by them. Additionally the respondent stated that (“pain does not like to wait, patients should be treated right away” and “physicians should have a reasonable work load”). These two statements could be presented as administrative category of healthcare service quality, namely *access dimension* and *efficiency measures dimension*, respectively of administrative category.

**Healthcare service provider 2**

The respondent number two is a male of 50 years old. His occupation is urologist and specialty is urologist. He has been practicing for 30 years at the hospital in Russia.

- **The respondent’s first associations of healthcare service quality**

Respondent associated quality of healthcare with conditions of his work meaning availability of facilities etc. Also he was concerned about access to the healthcare service in terms of patients: “*Patients must have access to healthcare service regarding the cost of this service and specialists that could provide this service*”. First association relates to the *tangible quality dimension*. Second issue could be associated with *access sub-dimension* or affordable care.
The respondent frequently mentioned the importance of doctors to be professional and referred to it as an essential component of quality of healthcare service. He stated during the interview: “The quality of healthcare can be damaged by incompetent doctors”; “Doctors must foresee the result of curing”; “The doctor is the one who decides what is better for patient and what he needs”. Several times interaction aspects were mentioned by the respondent. Specifically, he stated: “Doctor should always explain to the patient what he should expect from service in this organization as well as inform where he could find help that he want”; “Doctor should provide enough information about patient’s problem and what methods exist nowadays to treat him”. It is also could be supported by the respondent’s notion that he does not like the term ‘service’ and it would be better to refer to it as ‘help’. Also, interesting ideas were expressed by the respondent about patient involvement. Generally, he agreed that “patient should be actively involved in the process of treatment” and “passive observer is not acceptable behavior”. However, in his words patient’s role should be limited to certain extent especially in the case when “patient tries to interpret his illness and propose treatment in his own way using unreliable sources like Internet”. Also, respondent pointed that interaction could stop at exactly this point, that it is useless to continue treatment.

The statements made by the respondent about what doctor should do clearly relates to the professional skills dimension. Statements about interaction aspects points to the information sub-dimension as well as responsiveness sub-dimension. Patient involvement could be referred to the patient-centered sub-dimension. One more frequently mentioned dimension was health service outcome dimension (technical quality) or result of curing.

The most important dimensions and sub-dimensions for the respondent

The most essential issues for the second respondent could be related to the tangible quality dimension that he brought by himself into discussion. Other important frequently mentioned dimensions were professional skills dimension, information sub-dimension, responsiveness sub-dimension, patient-centered sub-dimension and health service outcome dimension. Five listed dimensions and sub-dimensions will be treated as aspects of the second priority of importance comparing to tangible quality dimension.

- Minor dimensions and sub-dimensions

Individualized care also was mentioned by the respondent as important. He stated: “It is quite easy to follow standards in healthcare, however these standards could deviate from system to system and it is difficult to have single right standards of medical care. That is why individual approach should be in the center”. Statements point to the empathy sub-dimension as respondent more inclined to be oriented toward patient and his needs instead of following standard procedures. Other slightly touched categories were environmental and administrative that respondent regarded as not really important or important for only some categories of patients.
Healthcare service provider 3

The healthcare provider number three is a male of 47 years old. He is an ophthalmologist from Russia and is working in the medical field for 19 years.

- The respondent’s first associations of healthcare service quality

The respondent number three associated healthcare service quality with professionally fulfilled work from his side. It was supported by the statement that is “my criterion of quality is my closeness to professional ideal”. Hereby, technical category of healthcare service quality, namely professional skills dimension was defined as the first association.

Next issue that was discussed by the interviewee is that physicians and patients could have different perception about an outcome of a treatment. It was explained that “patients cannot assess professional side of treatment and cannot estimate severity of their illness and think that after a surgery everything will be perfect”. In other words it was stated that patients have overestimated expectations about a result. So, the respondent stresses that “it is a physicians’ duty not to allow patients to have overestimated expectations” by providing information about real results of a treatment. So, informational sub-dimension of interaction dimension, functional category was touched.

Another aspect that emerged later but within initial associating as well was expressed by the statement that “physicians should have enough time for each patients” and by the idea that all hospital should be structured in such a way that everyone have enough time for fulfillment their duties. We could interpret this issue in two ways. One the one hand, it could be related to efficiency sub-dimension of interaction dimension, functional category as it deals with time spend by a physician on a patient. On the other hand, if we think how physicians could get more time for their disposal for spending it on their patients then it could be administrative duties to make schedules for physicians. In this case this aspect could be identified as efficiency measures dimension of administrative category owing to the mentioned idea that it should be the whole hospital structured in such a way. However, it could depend on characteristics of specific healthcare organization.

- Frequently mentioned dimensions and sub-dimensions

One of the most frequently discussed aspects relates to information. First of all importance of informing patients about their health conditions was mentioned within the first associations. Within the meeting with patients the respondent told that he should answer all patients’ questions. Also the patient-centered approach was explained as providing correct information in order “to help patients to make a right decision”. Among additional aspects of achieving good quality of healthcare the interviewee mentioned delivering information in reasonable doses to patients. These statements could be defined to be examples of information sub-dimension of interaction dimension.

The respondent presented ideas that interaction between physicians and patients should be built on the bases of individual characteristics of each patient. Thus good quality
meeting with a patient should incorporate physiological contact that is based on patients’ individual expectations. Also it was explained that a way of providing information should be selected for each personal individually. For example some patients expect a thorough explanation of a medical treatment while other prefers short description of medical suggestions. Regarding an issue of patients’ involvement in a process of treatment the respondent stressed that patients should be informed and a way of providing this information should be individual. Taking into account that respondent expressed his attitude toward approaching patients’ by incorporating their individual characteristics, we could highlight it as empathy sub-dimension of interaction dimension.

There are other statements that were rather often mentioned throughout the interview. One of them is that “in case even if the result is not achieved from the medical point of view, there are no conflicts between patients and physicians due to a good physiological contact”. Another statement was detected among additional factors for achieving good quality of healthcare service quality: “psychological interaction is important as everything could be done professionally but patient is not satisfied”. It was stated that environment could be treated as a question of psychological aspect, namely that “environment could affect on a process of building psychological contact with a patient” and appropriate appearance of building could assist in it too. The interviewee thought that in order to build a good psychological contact patients as well as doctors should look appropriate.

Examining provided responses we could suggest that all of them relate to assurance sub-dimension of interaction dimension. However we should notice that in some cases there is no clear connection between provided statements and defined sub-dimension. We decided to relate the interviewee phrases to assurance sub-dimension as their internal meaning is mainly about feelings of trust and compliance between physicians and patients. One of such examples is the first statement presented in the previous paragraph. We defined it as assurance as such situation could be achieved due to mutual trust and respect between mentioned two parties. Also it could be detected that such categories as environment category and other dimension of functional category were utilized in terms of assurance achievement.

- The most important dimensions and sub-dimensions for the respondent

Making a comparison between two previous points of the analysis of the second respondents’ responses, we could suggest that information sub-dimension of interaction dimension, functional category to be considered as the most important. Other discussed aspects could be defined to be less important than information but also very vital for good quality of the healthcare services. Among other discussed aspects there are professional skills of physicians, efficiency measure of administrative category, namely time for each of patients, empathy and assurance sub-dimension of interaction dimension, functional category. The importance of four listed aspects could argued to be the same level since those that were among first associations were not frequently mentioned within responses and vice verse.
- Minor dimensions and sub-dimensions

Also the respondent number three mentioned that physicians should be accessible for patients but access should be at such level that physicians’ rights are protected or in other word physicians should have time to restore their strengthens. This proposed idea could be related to access sub-dimension of interaction dimension, functional category.

Within the respondents’ answers we discovered such categories as environmental, namely atmosphere and tangible concern dimension of functional category. It was presented within description of assurance sub-dimension. These two categories could be utilized for achieving feelings of trust and respect between doctors and patients as the respondents stated that pleasant environment could affect on building a good physiological contact and also patients’ and doctors’ appearances could play rather important role as well.

Analyzed the provided responses we detected one aspect that were not previously presented within predefined list of healthcare service quality categories and dimensions.

It was expressed via the following statements and ideas that “patients should say “I want to be healthy, help me, please”, patients should be ready to ask question in order to be involved into a process of treatment. The first statement could mean that not only doctors should contribute to a process of treatment but also patients should be motivated to be cured. The second idea could be interpreted as that patients should be prepared to communicate with doctors or in other words patients should be interested and show motivation to be involved into process of treatment. We decided to name this newly emerged aspect as a team-work sub-dimension and it could be involved to interaction dimension of functional category since it deals with communications.

Healthcare service provider 4

The healthcare provider number four is a male of 49 years old. He is a physician of intensive care from Russia. The respondent has been practicing for 25 years.

- The respondent’s first associations of healthcare service quality

The first association of the forth respondent was expressed by the phrase that healthcare service should be provided at specific time when a patient needs it most of all. Another aspect that emerged is that patients should be able to receive healthcare service or medical help without any barriers such as queues, requirements to submit to much irrelevant documents or to go through some irrelevant procedures. Also among first associations the interviewee mentioned the importance of medical staff qualification (“without qualified medical personnel, good quality of healthcare cannot be achieved”) and kind, sympathetic healthcare providers’ attitude to patients, namely providers should be attentive and empathic to patients. And the last but not the least issue within first associations was about availability of enough amount of time for a meeting with a patient. It was stated that “additional time will help to contribute a physician’s psycho emotional energy to a patient. And his mind would be free from irrelevant things”.

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Conducting analysis of expressed fist associations we could reveal the following aspects. The first expressed opinion that medical service should be provided exactly when it is needed could be related to **reliability sub-dimension, interaction dimension** (functional category). It means that medical help should be delivered accurately in terms of time in order not to allow a patient to get unsatisfied as maybe if it is delivered later he will not appreciate even though an outcome of treatment will be achieved.

The second concern we could define as **efficiency dimension** of administrative category as easy access to healthcare service could be achieved through efficient administrative work to some extent.

The third issue we treat as **professional skills dimension** of technical category and **responsiveness** because attentiveness could be interpreted as an indicator of willingness to help patients from our point of view. And next presented aspect obviously represents **assurance sub-dimensions** of interaction dimension, functional category as it was related to healthcare service providers’ attitude to patients during communication.

The forth stated opinion on the one hand could be argued that it could be identified as efficiency sub-dimension of interaction dimension as it deals with time devoted for a meeting with patients. On the other hand efficiency sub-dimension presents issues between patients and administrative staff while mentioned time availability for meetings with patients could be achieved in cooperation of physicians and people responsible for scheduling time for meetings. It could be administrative or managerial staff. Thus, this aspect could be still related to administrative category but to a new dimension since efficiency measures dimension could be argued to be directed mainly to a patient-administrative staff link.

- **Frequently dimensions and sub-dimensions**

One of the most frequently stressed aspects is qualification of medical personnel. First it was mentioned within the first associations. Then it was told that good quality of the meeting with patients cannot be achieved without qualified healthcare service providers. Also it should be pointed that good qualification was presented not only as vital for delivering good medical services but also to be able to build good commutation with patients. The latter idea was presented by the statement that “for building good individual contact with patients, medical staff should have competences in physiology, to be intelligent [...] in order to be able to find words for explaining information to people with diverse educational backgrounds and personal characteristics”. This discussed aspect we suggest to consider as **professional skills dimension** of technical category.

Other rather often repeated statements are the following. Additional aspect for improving quality of the healthcare service was presented as “administrative staff should assist physicians in providing service by helping in contacting complementary diagnosing tests in other departments or healthcare organizations for instance”. Within issues that could negatively affect quality of the healthcare service there was such phrases as “physicians should not be overloaded with medical work” and “too much paper work from physicians’ side could distract them from patients”. During the meeting with patients the respondent would have appreciated opportunity to be able to contact other specialist in order to make right diagnoses.
We argue that presented statements described the same aspect but from various sides by using different phrases. The main idea of all listed phrases could be defined as support from administrative or managerial staff. So we decided to relate this aspect to a new dimension in administrative category and titled as support for medical staff. The last aspect discussed in the part about first associations could be related to this new dimension as well.

- The most important dimensions and sub-dimensions for the respondent

The most importance dimension could be considered to be professional skills of technical category as it is the only one aspect that was within both first associations and the most frequently mentioned. Also there could be the new emerged dimension, particularly support for medical staff of administrative category among the most important aspect as it was stated in both previously discussed point of the analysis.

Among less important but still vital for having a high quality of healthcare services dimensions are interaction of functional category, namely reliability and responsiveness and efficiency dimension of administrative category as they were among the very first association. Also information sub-dimension could have some importance as well. In spite of that this dimension was not so frequently mentioned as previously discussed or was not mentioned among the first associations, the statement in favor of it depicted its essentiality. For example “patients should understand what disease they have, how it influence on their health conditions”, “patients should be persuade necessity to be treated and thoroughly follow doctors’ instructions” as otherwise it could be rather difficult to achieve good results.

- Minor dimensions and sub-dimensions

Among minor aspects that have between touched just slightly within responses we noticed the statement that patients should be involved into process of treatment by providing information about changes in their feelings, health condition during a process of treatment to a physician. Hence we could list it as patient-centered sub-dimension as this aspect is directed to depict how patient should be involved into the process of treatment.

Within the meeting with a patient the respondent told that “physicians should be able to find common ground of communication and be able to ask questions by utilizing everyday language”. It could be interpreted as willingness to help patients as if a doctor is trying to find the same ground for communication with patients and trying to help a patient to describe his health condition. In this case it could be related to responsiveness sub-dimension. But if such an approach assists in building patients’ feelings of trust toward doctors or provides emotional support from doctors’ side to patients then it could be treated as assurance sub-dimension.

Environmental category, namely atmosphere and infrastructure were presented as indicators of patients’ perception of good technical side of healthcare organizations (“if there is good halls, good interior then patients could associate it with good technological equipage and qualified doctors”). Also the respondent mentioned tangible dimension (medical equipment) within his responses.
Healthcare service provider 5

The respondent number five is a male of 42 years old. He is a district doctor (general practitioner speciality) with 7 years of practice at the district medical center in Umeå.

- The respondent’s first associations of healthcare service quality

The first associations regarding healthcare quality those the respondent brought for discussion were following: “Quality in healthcare is when patient has a possibility to come and contact a doctor in reasonable time (same day or 2 or 3 days later). It clearly relates to the administrative category, namely efficiency measures dimension as administration is in charge for appointments and waiting time. Also the respondent told that “Patient should not have to wait more than a week” and added “I want to spent time for each patient as much as I want and as much as he needs. I want to know each patient and plan my time and work according to him”. So, second raised issue also relates to administrative category but with emphasis on efficiency sub-dimension within interaction dimension because doctor wants to spend enough time for each patient. Another initially provoked association was expressed by the phrase “I think that for the good quality it is important my own development within my profession (training and education)”. This issue points to professional skills dimension as self development is important aspect of it that patients usually expect.

- Frequently mentioned sub-dimensions

During the interview the respondent raised some problems several times. For example, the respondent discussed waiting time issues several times by answering the question about his first associations with quality, questions about what he thinks could improve and damage quality, the question about high quality meeting from his point of view. Another frequently mentioned topic was about how a doctor should interact with a patient. It was expressed by several statements throughout the interview: “Doctor should always listen to the patient and show that he understands the problem as well as show respect and empathy”; “Doctor should always end conversation with agreement with the patient and always make sure that the patient follow his thoughts”; “I always explain to the patient why I think this is the best option and make sure that the patient understand why I think this is reasonable treatment and why I propose this treatment”. Finally, the respondent concluded that if interaction is bad, it is mainly because of the lack of information. He also pointed that his job only to advice and not to insist on treatment or put himself in a position where he has a power over the patient. The last issue that was brought for the discussion two times is the professionalism of doctors that is “the key for providing good healthcare service” according to the respondent.

So, waiting time issue we can relate to the efficiency measures dimension within administrative category. Considering statements discussing interaction with patients, it is obvious that information sub-dimension within interaction dimension is the most often mentioned sub-dimension. Also, patient involvement is important part of statements which relates to patient-centered sub-dimension. Also, it should be noticed that when respondent was asked directly about patient-centered approach in healthcare he agreed about its importance, however he added: “We cannot do anything to keep patients satisfied and loyal to our organization otherwise they would drain our
healthcare system. We need to be in between, to be good but not to give everything”. Finally, the last discussed issue relates to the professional skills dimension.

- The most important dimension for the respondent

The first priority sub-dimensions and dimensions are efficiency measures dimension within administrative category and professional skills dimension as they were mentioned as associations and then repeated several times. Also, second priority is given to the efficiency sub-dimension within interaction dimension, patient-centered sub-dimension and information sub-dimension within interaction dimension.

- Minor sub-dimensions

During the interview some other aspects of quality were touched slightly. The respondent stated: “Environment could influence how patient feel. Location and not enough of open spaces could damage patient’s perception”; “As first impression lasts, healthcare organization should care about how they meet people on reception and work with them”. The first statement relates to environmental category and the second relates to administrative.

Some other issues were also brought during the interview that we identified as support for medical staff dimension within administrative category: “I want to know that we [doctors] are doing good work, I want good connection with doctors and good environment”.

Healthcare service provider 6

The respondent number six is a male of 62 years old. His occupation is a district doctor (general practitioner speciality) with 47 years of practice at the district medical center in Umeå.

- The respondent’s first associations of healthcare service quality

Starting from the first question about associations with quality of healthcare, the respondent expressed concern about time that he spends on patient. He said: “You need to have enough time to deal with all patients’ problems. Of course, you can always ask them to come another time, but it is not always possible to do”; “You have to deal with pressure as you need to meet a lot of patients and you have so little time for it” These statements indicate that access dimension within administrative category is important aspect of quality for the respondent. Also, efficiency sub-dimension within interaction dimension could be noticed within these statements as doctor concerned with availability of time spend on a patient.

- Frequently mentioned sub-dimensions

The respondent raised some issues several times such as time spend on each patient (“you need to have enough time to deal with problem” etc.) and interaction with patients. The last issue was expressed by following phrases: (1) “You should always make a deal with a patient today”; (2) “You have to be on speaking terms with patient so you do not get into confrontation”; (3) “You have to be open-minded and listen to
the patient. You should answer open-ended questions and give them time”; (4)“You need to meet person several time in order get to know them, their personality”; (5)“I always tend to ask patients what they think about their problems, what ideas do they have”; (6)”I have to know why they are coming”; (7)“You need to have participation of patients. They should be agreed with you. You have to have good patient-doctor relationship”; (8) “You have to negotiate with patient, tell them what we (doctors) are going to do, ask what they think about this”; (9) “You have to give them the proper basic background for this treatment, how good it is and what are alternatives and together we decide that this is the best way to treat”.

So, time issue relates to access dimension within administrative category as it was mentioned previously. The second issue and all its statements indicate patient-involvement in the process of treatment (patient-centered sub-dimension), the second, the third and the fourth statements clearly saying about the importance of building trust between a doctor and a patient (assurance sub-dimension) and knowing your patient (empathy sub-dimension), the eighth and the ninth issues relate to information sub-dimension.

- The most important dimension for the respondent

The most essential dimension for the respondent is access dimension within administrative category as respondent mentioned it as the first associations and then repeated throughout the interview. Less important sub-dimensions are incorporate sub-dimension within interaction dimension, patient-centered sub-dimension, assurance sub-dimension, empathy sub-dimension, information sub-dimension, efficiency sub-dimension within interaction dimension.

- Minor sub-dimensions

Other mentioned minor issues were related to the environment: “If you have untidy room it will give wrong impression. If you provide patient with everything than the patient will have a positive feelings” (atmosphere dimension)

Healthcare service provider 7

The respondent number seven is a female district nurse (nurse speciality) of 41 years old with 20 years of practice at the district medical center in Umeå.

- The respondent’s first associations of healthcare service quality

The respondent started her description of quality stressing the importance of professional treatment, “helping and guiding them in healing and treatment process as well as supporting them in their lives”. Also, she added: “I want to guide them in their own thoughts, so they know they are doing the right things”. Hereby, the respondent identify quality in terms of professional skills dimension, responsiveness sub-dimension (willing to help and guide), assurance sub-dimension (support), information sub-dimension (guide in their own thoughts).
Frequently mentioned sub-dimensions

The respondent recognized such issues as interaction and cooperation with patients several times. She expressed it in following phrases throughout the interview: “High quality meeting is when we have a flow in the talk, understand each other, agree on some issues, find some consensus”; “Patient should be prepared before meeting (to know why he is coming and what he wants from this meeting)”; “What patient wants is the most important thing, I should listen to his thoughts and ideas and guide them”; “Quality will be high if I can support the patient and make him feel as good as possible”; “We have to work in a team to help each other”; “...some patients are more sensitive to disturbing factors (phone calls, knocking on the door)”. So, within these statements patient-centered sub-dimension, responsiveness sub-dimension, assurance sub-dimension could be identified.

The most important dimension for the respondent

The first priority sub-dimensions that respondent stressed as associations with quality and then repeated several times are responsiveness sub-dimension and assurance sub-dimension. Second priority sub-dimensions are professional skills dimension, information sub-dimension and patient-centered sub-dimension.

Minor sub-dimensions

Administrative issues were assessed as very important part of the healthcare quality: “For example, if it is not enough parking spots, patients are late and stressed” (environmental category). Reception work could also impact the quality according to the respondent: “Reception should give good instructions and make everything understandable” (information sub-dimension).

One more issue that should be mentioned is that respondent expressed her desire to get help and advice from other colleagues concerning patient problems as well as reception should not bring problems in guiding patients. These notions could be related to a new identified dimension, namely support for medical staff.

Overall healthcare service providers’ perception of healthcare service quality

After conducted analysis of the responses provided by our 7 respondents we highlighted the most important dimensions and sub-dimensions for each of them. On the bases of the received list of the most vital aspects of the healthcare service quality we could develop overall healthcare service providers’ perception of healthcare service quality.

Within the first priority of importance healthcare service quality aspects we could identify professional skills dimension of technical category to be more essential comparing to others. The reason for our notion is that three respondents mentioned this dimension while other dimensions within the first priority were mentioned by one respondent each. Moreover mentioned technical category could be supplemented by tangible quality dimension. Other discussed categories or dimensions were administrative category and interaction dimension (see Table 8). Thus, we can argue that healthcare service providers perceive healthcare quality from technical category side with emphasis on professional skills.
Table 8. Healthcare service providers’ list of important dimensions and sub-dimensions.

<table>
<thead>
<tr>
<th>Healthcare service providers</th>
<th>First priority</th>
<th>Second priority</th>
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<tbody>
<tr>
<td>Provider 1</td>
<td>- professional skills dimension</td>
<td>technical category</td>
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<td></td>
<td>- information s-d.</td>
<td>- assurance s-d.</td>
</tr>
<tr>
<td>Provider 2</td>
<td>- tangible quality d.</td>
<td>technical category</td>
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<td></td>
<td>- professional skills d.</td>
<td>technical category</td>
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<td></td>
<td>- health service outcome d.</td>
<td>technical category</td>
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<td></td>
<td>- information s-d.</td>
<td>- responsive s-d.</td>
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<td></td>
<td>- patient-centered s-d.</td>
<td>interaction d., functional category</td>
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<td>Provider 3</td>
<td>- information s-d.</td>
<td>interaction dimension, functional category</td>
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<td></td>
<td>- professional skills d.</td>
<td>technical category</td>
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<td></td>
<td>- efficiency measures d.</td>
<td>administrative category</td>
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<td></td>
<td>- empathy s-d.</td>
<td>interaction d., functional category</td>
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<td></td>
<td>- assurance s-d.</td>
<td>interaction d., functional category</td>
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<tr>
<td>Provider 4</td>
<td>- professional skills d.</td>
<td>technical category</td>
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<td></td>
<td>- support for medical staff d.</td>
<td>administrative category</td>
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<td></td>
<td>- reliability s-d.</td>
<td>interaction d., functional category</td>
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<td></td>
<td>- responsiveness s-d.</td>
<td>interaction d., functional category</td>
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<td></td>
<td>- information s-d.</td>
<td>interaction d., functional category</td>
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<tr>
<td>Provider 5</td>
<td>- efficiency measures d.</td>
<td>administrative category</td>
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<td></td>
<td>- professional skills d.</td>
<td>technical category</td>
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<td></td>
<td>- efficiency s-d.</td>
<td>interaction d., functional category</td>
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<td></td>
<td>- patient-centered s-d.</td>
<td>interaction d., functional category</td>
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<tr>
<td>Provider 6</td>
<td>- access d.</td>
<td>administrative category</td>
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<tr>
<td></td>
<td>- patient-centered s-d.</td>
<td>interaction d., functional category</td>
</tr>
<tr>
<td></td>
<td>- assurance s-d.</td>
<td>interaction d., functional category</td>
</tr>
<tr>
<td></td>
<td>- empathy s-d.</td>
<td>interaction d., functional category</td>
</tr>
<tr>
<td></td>
<td>- information s-d.</td>
<td>interaction d., functional category</td>
</tr>
<tr>
<td></td>
<td>- efficiency s-d.</td>
<td>interaction d., functional category</td>
</tr>
<tr>
<td>Provider 7</td>
<td>- responsiveness s-d.</td>
<td>interaction d., functional category</td>
</tr>
<tr>
<td></td>
<td>- assurance s-d.</td>
<td>technical category</td>
</tr>
<tr>
<td></td>
<td>- professional skills d.</td>
<td>interaction d., functional category</td>
</tr>
<tr>
<td></td>
<td>- information s-d.</td>
<td>interaction d., functional category</td>
</tr>
<tr>
<td></td>
<td>- patient-centered s-d.</td>
<td>interaction d., functional category</td>
</tr>
</tbody>
</table>

Considering the list of second priority of importance, there is no agreement on the most essential aspect of healthcare service quality. We could suppose that there is no one common opinion because healthcare service providers have different specialties and it could influence content of their responses. For example the second respondent’s first association was that patients should receive medical treatment exactly when they need
it. It could be stated that this response was provided because the respondent is an intensive care doctor and for him it is very important to deliver medical help fast in order to save people’s life. So, it could be a cause that respondents mentioned various dimensions and sub-dimensions such as seven sub-dimensions of interaction dimension, two dimensions of technical category and one dimension of administrative category (see Table 8). However, we need to be selective as some sub-dimensions in most cases were mentioned once or twice. For this purpose, we decided to incorporate dimensions or sub-dimensions that were mentioned three times or more. So we would take into account opinions of approximately half of respondents. Within such dimensions and sub-dimensions we could specify the following: information, patient-centered and assurance sub-dimensions of interaction dimension as well as professional skills dimension of technical category.

Hereby, the healthcare providers’ perception of healthcare service quality that is mainly focused on technical side of service could be supported by interaction between doctors and patients. This interaction is directed to provide information to patients, involve patients in the process of providing a service and build feelings of trust or emotional support.

After conducting interviews and analysis, we discovered two newly emerged aspects of healthcare service quality. One was related to administrative category (i.e. support for medical staff) and another was referred to interaction dimension of functional category (i.e. team-work). **Support for medical staff dimension** consists in providing support from administration to the healthcare service providers in order to assist the latter in providing high quality service. Three respondents considered this aspect as one of the element of healthcare service quality. And **team-work sub-dimension** means that healthcare service providers and patients should act together. Not only providers should incorporate patients into decision making process and express their concerns but also patients should be motivated and express incentives to be treated and assist in it.

Our conducted study could support the findings of researchers within the first literature review. For example, Jun et al. (1998) argued that healthcare service providers attributed quality to technical aspects namely professional skills. This corresponds to our results within the first priority list. However, healthcare service outcome that was suggested by Jun et al. (1998) to be important for physicians, in our study was mentioned within the second priority and only by one respondent. Moreover, our findings depict the same issue as it was stated by Miranda et al. (2010, p. 2137). This statement relates to the idea that technical aspects of quality should be regarded by practitioners rather than patients. Our empirical study as well as findings in literature point to the technical side of healthcare service quality as a central for healthcare service providers’ perception of healthcare service quality. Concerning functional category our study support findings from the research of Jun et al. (2008) that physicians do not reject functional category in terms of healthcare service quality as all respondents mentioned interaction dimension of functional category. Also our received empirical results could supplement previous study of Jun et al. (2008) in terms of the fact that physicians utilize interaction with patients for communicating about diseases and ways of treatment. It was detected that within interaction dimension, respondents mostly presented information dimension. Hence information could be perceived as a possible mean for mentioned type of interaction. However our findings slightly deviate from Jun et al. (2008) facts that physicians do not overly look at interaction as a way of being
nice to patients while all respondents except one mentioned at least one of such sub-dimensions as responsiveness, assurance or empathy among important aspects of healthcare service quality.

Moreover it should be noted that our study supplemented previous study by two newly emerged aspects, namely support for medical staff dimension and team-work sub-dimension. However, somebody could challenged out conclusion as decision about new dimension and sub-dimension was based on our subjective approach while other researchers could attribute issues within new dimension and sub-dimension to already existing aspects.

Considering variety of occupations and specialities of interviewed healthcare service providers, namely 6 doctors and 1 nurse, as well as variety in years of practices, we suppose that it helped to receive more diverse perception of healthcare service quality as types of occupation or level of experience could possibly influence providers’ opinions about quality in the healthcare. Thus, it could assist in getting more comprehensive healthcare service providers’ perception. For the purpose of getting more thorough healthcare service providers’ perception it would be interesting for future researches to involve opinions of nurses with different specialities and other personnel such as receptionist.

### 4.3. Discussion: aligned or combined perceptions of healthcare service quality

Having conducted analysis of patients’ and healthcare service providers’ responses, we received overall patients’ and providers’ perception of healthcare service quality as results from the section 4.2. “Analysis of patients’ and healthcare service providers’ perception of healthcare service quality”. The aim of the current section is to compare two types of perceptions and to detect any similarities or differences that would enable us to align or combine them.

Table 9. Overall patients’ perception of healthcare service quality.
Regarding overall patients’ perception of healthcare service quality, we concluded that interaction dimension was the most important in terms of high quality service. Patients regarded this interaction that occurs between them and healthcare service providers from various perspectives that could be associated with specific sub-dimensions such as reliability, responsiveness, assurance, empathy, patient-centered and information. The main element of the patients’ perception is supplemented by administrative aspect of healthcare service (efficiency measures and access dimensions), technical aspect of service (service outcome and tangible quality dimensions) and one more aspect of interaction (efficiency sub-dimension) that was mentioned only within the second priority list (see Table 9).

Table 10. Overall healthcare service providers’ perception of healthcare service quality.

<table>
<thead>
<tr>
<th>Overall healthcare service providers’ perception of healthcare service quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>First priority of importance</td>
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<tr>
<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td>Second priority of importance</td>
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<tr>
<td></td>
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</tbody>
</table>

Healthcare service providers mainly perceived healthcare service quality from technical side emphasizing the importance of professional skills. Beside this concern, additionally healthcare providers stresses such aspects as tangible quality dimension, information, patient-centered and assurance sub-dimensions of interaction dimension that we considered as supplementary as they have been prioritized to be the second in terms of importance (see Table 10).

Comparing patients’ and healthcare service providers’ perceptions, we could reveal that both of them incorporated information, patient-centered and assurance sub-dimensions of interaction dimension. Also tangible quality dimension was mentioned by both parties. Hereby, two types of perceptions are similar in terms of listed aspects. Our results supported findings presented by Jun et al. (1998) in terms of some quality dimensions and sub-dimensions, namely that both parties consider tangible dimension of technical category and some dimensions from interaction dimension. So, patient-centered, information and assurance could be attributed to communication, customer understanding and collaboration from Jun et al. (1998) study. Also our results go in line with Jun et al. (2008) discussion that providers focus more on treatment related to communication. Additionally we revealed that patients considered this type of communication as important as well and that physicians did not reject importance of being nice to patients, namely assurance sub-dimension. So, these aspects could to some extent supplement previous study of Jun et al. (2008).

Differences of patients’ and healthcare service providers’ perceptions consist in the following points. First patients highlighted more sub-dimensions of interaction than healthcare service providers. It could indicate that patients see an interaction process
with providers from different perspectives. For example healthcare providers discussed only limited number of interaction’s aspects that could be described as providing information about diseases, procedures, asking questions about patients’ health conditions, reducing patients’ stress and trying to guide patients toward more reasonable medical decisions etc. In its turn patients are interested in all parts of interaction that are not only informative but also involve emotional and a psychological content. Another difference is that patients perceived technical category from service outcome and tangible quality dimensions’ point of view while healthcare service providers considered it in terms of professional skills and tangible dimensions. So we suppose that patients listed service outcome and tangible quality directly as they could be able to assess a treatment outcome (i.e. observing theirs health conditions and symptoms) and tangible things (i.e. observing how modern medical equipment are, how modern tests are and etc) more evidently than professional skills. Patients tended to describe professional skills of healthcare providers from interaction side or how they are communicated and behaved. Next difference is administrative aspect. Providers did not pay so much attention to its aspect as patients did. Efficiency measures and access dimensions of administrative category were stressed by patients. So, our findings relative to patients’ concern about access dimension go in line with the research of Owusu-Frimpong et al. (2010, pp. 212, 216) where it was showed that patients suggested to improve this aspect.

Figure 4. Aligned and combined perception of healthcare service quality.
Taking into account depicted similarities and differences, we could argue that two types of perceptions are complementary. We could align similarities and combine differences in order to receive one comprehensive perception of healthcare service quality. Thus, the aligned and combined perception of healthcare service quality from patients’ and healthcare service providers’ perspective includes:

1. Technical aspect, namely professional skills, service outcome and tangible quality dimensions,
2. Interaction dimension, namely reliability, responsiveness, assurance, empathy, patient-centered, information and efficiency, and
3. Administrative category, namely efficiency measures and access dimensions (see Figure 4).

Table 11. Other minor dimension and sub-dimensions.

<table>
<thead>
<tr>
<th>Minor dimension and sub-dimensions</th>
<th>Patients</th>
<th>Healthcare service providers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental category:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- atmosphere;</td>
<td></td>
<td>- atmosphere;</td>
</tr>
<tr>
<td>- location;</td>
<td></td>
<td>- infrastructure.</td>
</tr>
<tr>
<td>- infrastructure.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functional category</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- interaction dimension:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- access sub-dimension;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Besides the most important and other discussed aspects of healthcare service quality, we could take a look at minor dimensions and sub-dimensions expressed by both types of respondents that have not been mentioned within previous discussions (see Table 11).

It could be noticed that both interviewed parties related environmental issues of healthcare organizations to not important aspects. Within examined literature, we did not detect environmental category that would have been counted as crucial for healthcare service quality. So, we could suggest explaining the absence of discussion about environmental category within reviewed literature owing to its less importance comparing to other categories.

Taking into access sub-dimension of interaction dimension that relates to possibility easily get access to doctors, it was rather unexpectedly to detect that it was the healthcare service provider who mentioned this aspect of healthcare service quality while within the literature review Owusu-Frimpong et al. (2010, pp. 212, 216) told that patients expressed opinion for improvement of access to treatment. Hence we could suppose that our interviewed patients did not have any previous experience that would have provoked them to discuss this sub-dimension.
5. The Second Literature review: Quality management initiatives

The aim of this chapter is to present the literature review on quality management initiatives, namely TQM, Lean and Six Sigma in order to supplement the development of a combined quality management model applicable to healthcare settings. It is important to note that the main focus will be on basic principles, values, methodologies and tools of TQM, Lean and Six Sigma, as we are not interested in already existing modifications of initiatives or their already discussed adaptations to healthcare industry. It was decided to follow this approach because of utilizing of existing modification or adaptations of quality management models could limit us in terms of constructing a combined quality management model to some extent. Adapted or modified models are usually developed regarding some specific context features or they could have narrow applicability and we are trying to develop basic approach for constructing a quality improvement model.

We will start from presenting a background of these initiatives, namely origins and overall meaning. Then we will describe the most important and strong element namely values, principles, and methodologies, tools of TQM, Lean and Six Sigma. The choice of these elements will be guided by such fact as their popularity and wide applicability. Finally, we will discuss effects after successful implementation of them. Following this structure we will be able to compare them and identify similarities and differences. Also, discussion of TQM, Lean and Six Sigma adoption within service industry and healthcare industry will be presented for our awareness and understanding of how they were applied in these areas. The review will provide understanding of how initiatives could be integrated in one model and finally assisted us in developing comprehensive model based on previously derived definition of service quality in healthcare.

5.1. Total Quality Management [TQM]

5.1.1. TQM: initial approach

Background. Originally TQM started its development in Japan in the mid 1980s aiming at improving organizational performance (Näslund, 2008, p. 271). Later, noticing success of TQM implementation in Japanese companies, large American manufacturing firms started to adopt TQM practices and this in its turn triggered the spreading of quality initiative in different countries, industries, types and sizes of businesses etc. (Powell, 1995, pp. 16-17). It should be also mentioned that development of TQM ideas was significantly influenced by few American and Japanese “quality” experts, namely Deming, Juran, Feigenbaum, Crosby and Ishikawa that proposed different solutions for quality management (Krüger, 2001, p. 146).

There is no single definition of TQM as each author and organization considered it in different contexts. According to Dahlggaard and Dahlgaard-Park (2006, pp. 273-274) definition of TQM is following:

“... a corporate culture characterized by increased customer satisfaction through continuous improvement, in which all employees in the firm actively participate.”
This definition stresses the importance of building corporate culture around TQM and engaging all employees in it. This definition is quite vague and incomplete for our study as it touches only some aspects of TQM namely its principles.

For Hellsten and Klefsjo (2000, p. 241) view TQM:

“... as a continuously evolving management system consisting of values, methodologies and tools, the aim of which is to increase external and internal customer satisfaction with a reduced amount of resources.”

This definition could be seen as the most comprehensive as besides stressing continuous improvement and customer satisfaction it describes TQM as a system consisting of components (values, methodologies and tools). So we will continue to explore concept from this perspective.

**Important elements.** Following our chosen approach, TQM could be presented as management system consisting of values, methodologies (or “ways to work consisting of a sequence of activities”) and tools (that is, “more concrete diagrams or matrices, sometimes with a statistical base”) (Figure 5) (Hellsten & Klefsjö, 2000, p. 241). The tools and methodologies presented in Figure 4 are just some examples, though values are common values found in many descriptions of TQM by Hellsten (1997, cited in Hellsten & Klefsjö, 2000, p. 240) in his literature study.

Figure 5. Total Quality Management as management system.

Source: Hellsten & Klefsjö, 2000, p.4.
Deciding what values are the most important in TQM, it is reasonable to mention quality experts, namely Deming, Juran, Feigenbaum, Crosby and Ishikawa, as their ideas basically laid the foundation for the concept. They stressed the significance of following elements: *customer satisfaction, cost reduction, leadership and top management commitment, training and education, teamwork and organizational culture* (Hoang, 2010, p. 933).

Also, Vouzas and Psyhogios (2007, p. 63) stressed that despite big variety of opinions about what should incorporate TQM, some elements are essential for efficiency of the TQM programs. Authors looked at TQM in light of its “soft” (principles and values) and “hard” (tools and techniques) aspects as many definitions incorporate them (Vouzas & Psyhogios, 2007, p. 63). The “soft” aspects are *leadership, strategic quality planning, employee management and involvement, supplier management, customer focus, process management, continuous improvement, information and analysis, knowledge and education* (Fotopoulos & Psoman, 2009, p. 152). “Hard” aspects are presented by following management tools and techniques: *flow charts, relations diagram, scatter diagram, control charts, Pareto analysis, quality function deployment, design of experiments etc* (Fotopoulos & Psoman, 2009, p. 153).

Another thorough TQM literature review revealed that complete TQM programs mainly have in common 12 factors (Powell, 1995, pp. 18-19):

1. Committed leadership
2. Adoption and communication of TQM
3. Closer customer relationships
4. Closer supplier relationships
5. Benchmarking
6. Increased training
7. Open organization
8. Employee empowerment
9. Zero-defects mentality
10. Flexible manufacturing
11. Process improvement
12. Measurement of performance

Thus, considering qualities gurus’ ideas and essential elements of TQM shared by different authors as well as 12 common factors of complete TQM programs, we can identify following basic elements of TQM that will be useful and essential for our study:

1. *Customer focus:* as organization depends on its customers, it should provide products or services in terms of customer requirements, needs, wants, perceptions (ISO, 2011).
2. *Continuous improvement:* continuous enhancement of all processes and activities should be persistent goal for all organization (ISO, 2011).
3. *Focus on processes:* all activities and its associated resources should be considered and managed within processes, so it will result in efficiency in terms of reaching its goals (ISO, 2011).
4. *Employee involvement:* people are essential part of organization and their involvement could lead to advantageous use of their abilities (ISO, 2011).
5. Leadership and top management commitment: top management should be committed to the philosophy and set goals for the whole organization, so everyone will be involved in achieving them (ISO, 2011).
6. Close supplier relationship: organization should work in cooperation with its suppliers in order to create value (ISO, 2011).
7. Training and education: programs for training and education should be established in order to fully comprehend new philosophy and its principles, developing team skills, problem-solving abilities etc (Powell, 1995, p. 19).

These elements mostly concern the values (1-6) and methodologies (7-9) of TQM. It is also important to mention one major improvement methodology namely Shewhart/Deming cycle or PDCA cycle (Plan-Do-Check-Act) that sometimes used as a tool. Tague (1995, cited in Gunther & Hawkins, 1999, p. 21) described following steps for the implementation of the cycle: “(1) Plan: Recognize an opportunity and plan the change; (2) Do: Test the change, carry out a small scale study. (3) Check: Review the test, analyze the results, and identify learnings. (4) Act: Take action based on what you learned in the check step. If you were successful, incorporate the learnings from the test into wider changes. If the change did not work, go through the cycle again with a different plan.”

As for the TQM tools, Scheuermann, Zhu and Scheuermann (1997, pp. 266-269) identified 15 most often used tools that they divided into qualitative and quantitative tools. Qualitative tools incorporate flow charts, cause-and-effect diagrams (Fishbone or Ishikawa Diagram), multi-voting, affinity diagram, process action teams, brainstorming, election grids, task lists. Quantitative tools include Shewart cycle (PDCA), control charts, scatter diagrams, Pareto charts, sampling, run charts, histograms.

Psychogios and Priporas (2007, p. 43) proposed following TQM tools that were most frequently mentioned in Quality Management Literature: Statistical Process Control, Pareto analysis, matrix diagram, histograms, tree decision diagram, Critical Path Analysis, cause-and-effect diagrams (Fishbone or Ishikawa Diagram).

One more summary of basic tools was made by Gunther and Hawkins (1999). After reviewing Deming and Shewhart works they identified following tools: PDCA, force field analysis, consensus model, cause and effect diagram, five whys, work process measurement, flowcharting, brainstorming, scatter diagram, nominal group technique, Pareto chart or analysis, focus groups, decision matrix, customer-needs mapping, activity-based cost accounting, customer service loss calculation, benchmarking (Gunther & Hawkins, 1999, pp. 102-106)

Moreover, new seven management tools “M7” are considered to be very popular within TQM that are affinity diagrams, relation diagrams, tree diagram, matrix diagram, matrix data analysis, PDPCs (Process Decision Program Chart), and arrow diagrams (Shahin et al., 2010, p. 184). They considerably defer from basic seven quality tools
(Q7): flow charts, cause and effect diagrams, Pareto charts, histograms, run charts and graphs, X-bar and R-control charts and scatter diagrams (Shahin et al., 2010, p. 184). The basic tools compared to new quality tools are very simple and useful as they do not require competence in statistics and can be used for deciding different quality-related problems (Shahin et al., 2010, p. 184).

So, within our work we can select the most popular and essential tools as well as some tools could be useful for our study:

- **flow charts (or process map)** “are pictorial representations that trace the sequence of steps from the beginning to the end of the process (Chakrapini, 1998, p. 95).”
- **cause-and-effect diagram (Fishbone or Ishikawa Diagram)** is “a graphical technique in which a problem is represented as a fish’s head; the purpose of the diagram is to identify probable causes of the problem (Chakrapini, 1998, p. 193).”
- **affinity diagram** “is a graphical brainstorming tool, used to group facts, opinions, ideas and customer desires according to some form of natural affinity (Shahin et al., 2010, p. 187).”
- **control charts** “are statistical charts used to monitor, control, and improve performance over time. They involve plotting performance figures on a graph and making a few minor statistical calculations to identify the lower and upper limits of common cause variations (Chakrapini, 1998, p. 139).” When process is outside these limits it is important to explore carefully this observation in order to find causes of deviation (Chakrapini, 1998, p. 139).
- **scatter diagrams** “are graphic plots that depict the simultaneous relationship between two variables (Chakrapini, 1998, p. 81).”
- **Pareto chart-analysis** “is a pictorial depiction of events such as customer complaints. It separates the “vital few” (20%) from the “trivial many” (80%) and shows the areas in which our actions are likely to produce the highest impact (Chakrapini, 1998, p. 109).”
- **histograms** “is a graphical tool for summarizing large amounts of data to show frequency distribution (number of times each value of a set of measurements (Shahin et al., 2010, p. 186).”
- **brainstorming** “assists work groups or teams in a process of idea generation by involving organizational members in a group discussion (Gunther & Hawkins, 1999, p. 103)”
- **focus group** “tool assists in the generation of ideas regarding a particular situation, problem, or decisions (Gunther & Hawkins, 1999, p. 103).” The ideas will be proposed by key informants during the discussion (Gunther & Hawkins, 1999, p. 103).

Each mentioned tool has some specific characteristics and that is why it could find its application in different areas of quality management, namely for defining the problem, analyzing the problem, solving the problem and evaluating performance (see Table 12). In order to identify quality problems within organization such tool as brainstorming could be useful, as it generates ideas within group discussion. In its turn affinity diagram tool helps organize ideas after brainstorming. Flowchart is one more problem identification tool, as it depicts the process where flaws and bottlenecks could be found. Next step after finding out the problems is analyzing the problem and identifying root
causes of the problem. *Pareto chart-analysis* could be helpful for this purpose. It gives opportunity to identify and focus on issues that cause 80% of problems. Another cause analyzing tool is *cause-and-effect diagram* that visualize all essential factors (variables) that impact some problem. *Controls charts* also could inform about the sources of the problem after detecting variations on the graph. *Scatter diagram* may be used for detecting cause and effect relationship between identified issues. After analysis is done, problem solving or improvement activities could be employed by using following tools: *brainstorming* (to generate solutions), *scatter diagram* (to show correlation between variables), *Pareto chart* (to prioritize the issues according to Pareto principle), and *histogram* (to find cause of much variation). Finally problem solving actions should be followed by performance evaluation and control tools such as control charts, scatter diagrams, Pareto charts, histogram and PDCA cycle (to check changes and identify problems in a timely manner).

It should be noticed that application of mentioned tools to specific areas is our own interpretation as many tools have multiple applications. For example, brainstorming could be used throughout all areas.

Table 12. Application of TQM tools.

<table>
<thead>
<tr>
<th>Tools</th>
<th>Defining the problem</th>
<th>Problem analysis</th>
<th>Problem solving or improvement</th>
<th>Performance evaluation and control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brainstorming</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Focus group</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flow charts</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cause-and-effect diagram</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Affinity diagram</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control charts</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scatter diagrams</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Pareto chart-analysis</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Histogram</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>PDCA cycle</td>
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*Effects.* Becoming a quality company, a lot of benefits could be gained as customers always demand quality. Among the most obvious are customer satisfaction and loyalty, financial advantages (low costs and high returns on sales and investments), access to global markets, improved image and reputation of the firm, improved quality of management decisions, introduction of the innovations, increased productivity, improved quality and competitiveness of products (Andersson et al., 2006, p. 285).

*Criticism.* The problems of implementing TQM could be related to the difficulties in identifying TQM as a concept (Andersson et al., 2006, p. 285). It could be attributed to the different terms used for describing concept such as total quality control, total quality improvement, strategic quality management etc (Hellsten & Klefšjö, 2000, p. 239). However, the most important reason is that there is no clear definition of TQM
(Hellsten & Klefsjö, 2000, p. 239). Particularly, survey made by Eskildson (1994, cited in Andersson et al., 2006, p. 285) supports this notion. Pyzdek (1999, cited in Andersson et al., 2006, p. 285) concluded that it is important constantly renovate knowledge of quality in order to grasp changing meaning of TQM. Another challenge relates to the fact that TQM programs require a lot of efforts, time and resources but tangible results sometimes are hardly seen (Andersson et al., 2006, p. 285).

So, basically TQM is an integrated quality management philosophy that consists of a range of practices such as continuous improvement, customer satisfaction, process approach, employee involvement, constant measurement of results etc (Powell, 1995, pp. 16-17). TQM gives possibility to choose among wide range of principles, methodologies, tools and techniques. However, they should be implemented only after deciding about the meaning of the TQM.

5.1.2. TQM in service industry

Existing literature argue that TQM can be effectively employed in service industry just like in manufacturing industry (Gupta et al., 2005, p. 390). US and Japanese TQM founders and proponents (Deming, Juran, Feigenbaum, Crosby, Ishikawa) stress the universality of quality management principles (Gupta et al., 2005, p. 390). However, it should be noticed again that these gurus developed and proposed their concepts using gained knowledge in manufacturing sector.

Recent studies on quality management in service industry clearly indicated that service organizations can not gain the same efficiency and results in applying TQM practices comparing to manufacturing organizations (Yasin et al., 2004, p. 377). So, there are some inherent features of service quality that makes deployment of TQM in service sector non-comparable to its deployment in manufacturing sector. Several studies on implementation of TQM in service organizations support this notion. Beamount et al. (1997, cited in Prajogo, D., 2003, p. 176) study of 261 manufacturing organizations and 85 service organizations revealed that service organizations used not as many quality management tools as manufacturing organizations. Another study of Woon (2000, cited in Prajogo, D., 2003, p. 176) that was conducted in Singapore using 240 its local firms, discovered lower rate of TQM implementation among service companies, especially concerning such elements as information and analysis, process management, and quality performance. However, the Woon’s study has not detected striking discrepancy in deployment of leadership, human resource, and customer focus aspects of TQM.

Thus, we can conclude that ‘soft’ aspects of TQM are applied similarly for both industries but ‘hard’ aspects are quite different. One more study of Huq and Stolen (1998, cited in Prajogo, 2003, p. 176) of TQM implementation was carried out using 18 manufacturing and 18 service companies and revealed that service companies do not use a whole range of TQM practices comparing to manufacturing firms. This study also supports previous study as it has not identified any differences in applying mission statement, customer focus, management commitment, empowerment and communications elements of TQM between manufacturing and service firms.
Since 1990s a lot of healthcare organizations following the success of manufacturing and service companies have tried to implement TQM principles and methods in order to improve quality and reduce costs (Lin & Clousing, 1995, p. 65). One more time TQM principles and methods proved to be universal as they could be applied even for such a complex system as healthcare. Moreover, TQM basic principles are effectively used in healthcare (Duggirala et al., 2008, p. 694). For example, regarding top management commitment and leadership, Horowitz et al. (2003, cited in Duggirala et al., 2008, p. 695) documented positive effects such as reduced time of stay, shorter diagnostic study, and better materials management. Considering another example such as process management, there are following essential process management dimensions for healthcare to assess and control: ease of access to the hospital and admission process and procedures; management of patients’ records; clinical and administrative processes; discharge procedures; clinical outcomes of medical care (Duggirala et al., 2008, pp. 696-697). One more example relates to the customer focus. It was revealed that within healthcare focus on patient should be especially clear as customer in healthcare differs from customer in any other service, having physical discomfort and emotional stress (Duggirala et al., 2008, p. 697).

Existing literature suggests that TQM is usually applied for administration processes rather than for core processes (clinical processes) (Zabada et al., 1998, p. 58). Mainly the TQM is considered by healthcare managers as cost reduction tool for different supportive functions and its core philosophy of creating quality organization is disregarded (Zabada et al., 1998, p. 58). However, all principles, methods and tools of TQM were developed with the focus on the whole organization and all its functions and it was aimed to integrate all employees in constant quality improvement for achieving customer satisfaction. So, it is important to consider what obstacles prevent healthcare organizations from full implementation of TQM. Shortell et al. (1995, cited in Zabada et al., 1998, p. 58) distinguished following obstacles that can be related to specific culture of healthcare organizations:

- bureaucratic and highly departmentalized structure of healthcare organizations;
- priority in satisfaction of needs is given to healthcare delivers rather than customers;
- leadership style is authoritarian and largely influenced by traditional heroic model of medicine;
- senior management is not enough committed to TQM programs;
- middle managers resist changes in fear of losing their jobs.

Among other important issues we should stress that physicians are not involved and committed to TQM programs as they do not want to be regulated and controlled and lose autonomy as well as they consider TQM principles to be not applicable to individual cases of patients (Short & Rahim, 1995, p. 260). Thus, all considered issues suggest that some aspects of complex and dynamic healthcare system contradict TQM principles and this could result in adaptation of TQM to healthcare system or vice versa.

Generally, it is argued that successful implementation of TQM in healthcare organizations results in improved service quality as well as healthcare quality and productivity; preventing mistakes in medical treatment that could lead to unnecessary
expanses and even death; decreasing the cost of treatment; satisfying customers (Yang, 2003, p. 93).

Thus, we can conclude that TQM in healthcare is quite influential quality practice. According to its concepts, main focus of TQM is on the patient and patient’s expectations. The leading role in providing all necessary conditions for patients’ satisfaction is allocated to top management while all administrative and medical staff is constantly engaged in quality management programs. Also, TQM implies process approach to resources and activities as well as continuous improvement of them. However, there are many obstacles such as healthcare organization structure and culture that should be considered before implementation of TQM.

5.2. Lean

5.2.1. Lean: initial approach

Background. Lean production or lean thinking is another continuous improvement concept with particular focus on reducing wastes (titled “muda” in Japanese), e.g. activities that consume recourses but do not create value. New movement started its development from philosophy called Toyota production system in Japan in the early 1950s and later it was named as lean production and lean thinking by Womack (Dahlgaard & Dahlgaard-Park, 2006, p. 264).

National Institute of Standards and Technology (2000, cited in Andersson et al., 2006, p. 288) gives following definition of Lean and presents it as systematic approach that could be applied to the whole organization and its processes continuously:

“A systematic approach to identifying and eliminating waste through continuous improvement, flowing the product at the pull of the customer in pursuit of perfection.”

The definition incorporates all key aspects of Lean that is why is relevant for our study.

Important elements. Basic principles of lean were presented by Womack and Jones (1996, cited in Abdi et al., 2006, pp. 193-195):

1. Specify value. This principle means to identify value from customers’ points of view. The product or service should meet customers’ needs and expectations in terms of quality and price.

2. Identify the value stream. In lean approach it implies to identify all activities that engaged in creating product or service and then optimize them according to end-user requirements. So, optimization results in eliminating of non-value adding activities that is possible to avoid.

3. Make the product or service flow. After first two steps, next step is to make identified adding-value activities to flow without interruptions. All obstacles such as delays, downtimes, inventories, bottlenecks, queues should be eliminated to ensure continuous flow.
4. Let customer pull. It means that company produce products according to the pull or demand of the customer. It is preferably that supply is providing from manufacturing instead of stock and a customer order is used instead of forecasting.

5. Perfection. Perfection requires absolute excluding of wastes along four previous steps. This process is continuous and leads to the transparency of all activities. It is quite apparent that perfection will never be achieved but unnecessary wastes will be avoided.

Thus, the lean production is aiming at eliminating waste (titled “muda” in Japanese) and creating value along the whole value stream; to eliminate wastes, continuous improvement (titled “kaizen” in Japanese) should be employed together with radical improvement activities (titled “kaikaku” in Japanese) (Arnheiter & Maleyeff, 2005, p. 9). Thus, approach basically strives for perfection and this process never stops. To reduce muda, just-in-time (JIT) production methods were developed, that became central to the lean methodology (Dahlgaard & Dahlgaard-Park, 2006, p. 264).

Taiichi Ohno, the Toyota executive, identified seven wastes namely: overproduction, waiting, transporting, inappropriate processing, unnecessary inventory, unnecessary motion, defects (Abdi et al., 2006, p. 192). Later Womack and Jones added eighth waste - the design of goods and services that do not meet the customer’s needs (Abdi et al., 2006, p. 192).

One more significant component of lean is a reduction of variability including demand variability, manufacturing variability, and supplier variability (Arnheiter & Maleyeff, 2005, p. 10). Manufacturing variability consists of variation of product quality characteristics (e.g. length, width, weight) and variation in task times (e.g. downtime, absenteeism, operator skill levels) and supplier variability comprises uncertainties in quality and delivery times (Arnheiter & Maleyeff, 2005, p. 9).

To identify and eliminate wastes a lot of tools and approaches are used in Lean such as Kanban, Value Stream Mapping, Kaizen costing and cost analysis, total productive maintenance, engineering and change management etc. (Andersson et al., 2006, p. 289).


At the same time Pojasek (2003, pp. 86-87) identified next tools and techniques that he called “building blocks” for Lean implementation: Five S, Visual Controls, Poka-Yoke, Cellular Design, Quick Changeover, Pull Scheduling, Kaizen.
Among many tools Näslund (2008, p. 275) identified the most eminent tools namely *process/value stream mapping, Kaizen, Five S, and Kanban* that are also specifically Lean tools. So, in order to set limits for Lean toolkit as well as suggest tools that are inherent in Lean, we will use these tools in our research:

- **process/value stream mapping**: used to visualize physical flows and information flows in order to identify and reduce wastes (Bicheno, 2004, pp. 75-76).
- **Kaizen**: used for continuous improvement of processes in small increments (Bicheno, 2004, p. 148).
- **Five S (Sort, Set, Shine, Standardize, Sustain)**: standardized discipline for improvement at workplace (Näslund, 2008, p. 275).
- **Kanban**: used for pulling components that process requires when it is needed or just in time (Bicheno, 2004, pp. 107-110)

**Effects.** The effects after introducing Lean are obvious as eliminating wastes leads to reduced costs, increased productivity, increased inventory turns, increased capacity, cycle-time reduction and finally to overall quality improvement and customer satisfaction (Andersson et al., 2006, p. 289).

**Criticism.** The main critic is that Lean could lead to inability of organization to be flexible to changes and thus innovative (Andersson et al., 2006, p. 289). Yusuf and Adeleye (2002, cited in Salah et al., 2010, p. 263) also added that following Lean principles put a lot of pressure on people in order to involve them in the process.

Concluding, Lean is a concept that has clearly defined goal, namely to reduce waste, and all organization’ efforts should be directed to it. It proposes clear and rigid steps for achieving its goal, however, its rigidity inevitably could lead to inflexibility and low innovativeness.

### 5.2.2. Lean in service industry

The possibility of applying lean principles in service operations was proved by the research of Per Åhlström (2004). Moreover it is possible to discover some empirical examples of a successful implementation of Lean within service companies. For example, some investment banks utilized a lean approach to solve a problem of miscommunication or mishandling of trades and forecasted to save 7 million USD annually (Allway & Corbett, 2002, p. 54). Also the practice of a lean approach within a large teaching hospital assisted in uncovering 20 percent capacity within its operation rooms (Allway & Corbett, 2002, p. 54). Bowen and Youngdahl were standing for possibility applying lean principles within service companies and provided an example of Taco Bell, Fast Food Company. The company managed efficiently to implement pull production initiated by customers’ demand through investigating people’s desires and to incorporate a just-in-time approach of shipments of pre-processed materials (Abdi et al., 2006, p. 201).

However Åhlström made several remarks in relation to altering of lean principles in terms of services characteristics in order to achieve fruitful results. Some of mentioned characteristics are customers involvement and simultaneous production and consumption of services (Åhlström, 2004, pp. 560-561).
So, Lean methodology or five principles could be approached through service view in following manner:

1. **Specify value by Service.** This principle is used in the same manner as for product and means to identify what constitutes value of service for the customer and adopt it according to customer’s needs and expectations. In combination with service marketing this principle is easy to apply in service industries (Abdi et al., 2006, p. 193).

2. **Identify the service value stream.** In service industry identification of service value stream is relevant principle, as service organizations incorporate some processes. All these processes and parts should be interconnected in order to improve value chain (Abdi et al., 2006, p. 194).

3. **Make the service flow.** In service industry the obstacles for continuous service flow without delays and queues could be inconsistent behavior like confusing and contradictory words or actions of staff (Abdi et al., 2006, p. 194). Such behavior brings frustration among workers and productivity as long as cooperation among them starts to fall.

4. **Let customer pull.** In this situation pull means detecting different behaviors and expectations and be flexible to ever changing and diverse demand. Like for manufacturing organizations, it is suggested not to use behavior forecasting as it can cause unnecessary delays and queues (Abdi et al., 2006, p. 195).

5. **Perfection.** Perfection should be pursuit in terms of people and behavior for making processes transparent (Abdi et al., 2006, p. 196). As in lean production, perfection is difficult to accomplish.

Thus, Lean principles could find its application in service industry. Moreover, service organizations could benefit from it by achieving control over key processes, introducing sustainable improvements and gaining financial advantages as well as tangible benefits for customers (Abdi et al., 2006, p. 198).

### 5.2.3. Lean in healthcare

Lean thinking reached healthcare industry in early 2000s and now it is widely accepted approach in delivering healthcare service (Souza, 2009, p. 122). The appropriate application of Lean Thinking could result in reducing or eliminating delays, repeated encounters, errors, and inappropriate procedures (Young et al., 2004, p. 162).

General principles of Lean proposed by Womack and Jones (2003, cited in Kollberg & Dahlgaard, 2007, p. 13) are also applicable for healthcare:

1. **Specify the value.** From patient’s perspective value means medical quality, accessibility, comfort, treatment, respect, participation (Kollberg & Dahlgaard, 2007, p. 13). So, patients are mainly concerned with functional category of the service quality.

2. **Identify the value stream for eliminating waste** principle in healthcare could be applied by identifying value-creating activities (diagnostic and treatment activities) and activities that add value (supportive activities) and after that eliminate wastes that could
arise one each step of activity (time delays for a visit or operation, overcapacity, preparation time needed for an operation or visit, medical device down time) (Kollberg & Dahlgaard, 2007, p. 16).

3. **Continuous flow of products in value-creating process** principle can be introduced by using JIT in order to adjust the capacity with the level of demand and multi-skilled teams for specific patient groups (Kollberg & Dahlgaard, 2007, p. 16).

4. **Pull principle** is integrated in healthcare when accessibility, interaction and participation elements of core activity are in place (Kollberg & Dahlgaard, 2007, p. 16). So, if in manufacturing the product is pulled by customer, in service it is interaction and participation instead.

5. **Perfection** principle is the most relevant for healthcare as mistakes could cost people’s lives. In order to reach perfection it is important to set goals and measure performance in terms of effectiveness and efficiency.

In general, Lean application in healthcare could lead to such positive effects as improved safety and quality of service, reduced costs and enhanced personnel moral (Joosten et al., 2009, p. 345). Also Young et al. (2004, cited in Kollberg & Dahlgaard, 2007, p. 11) specified following aspects that could be enhanced, namely eliminating or reducing delays, repeated meetings, errors and inappropriate procedures. However, some obstacles could appear in adoption of Lean such as difficulties in identifying processes within healthcare (Proudlove et al., 2008, p. 33) and personnel resistance (Joosten et al., 2009, p. 345).

### 5.3. Six Sigma

#### 5.3.1. Six Sigma: initial approach

*Background.* The development of Six Sigma approach started at Motorola company and eventually Six Sigma quality program was proposed by Smith in 1987, that consisted of 6 improvement steps and statistical tools (Salah, 2010, p. 250). Further development of this quality system took place in General Electric in 1990s where Motorala’s Six Sigma steps were replaced by four phases, namely measure, analyze, improve and control (Salah, 2010, p. 250). Later one more phase was added (Define phase) and DMAIC (define, measure, analyze, improve, and control) cycle was formed (Näslund, 2008, p. 271).

Generally, Six Sigma is defined in statistical terms as (Chakrabarty & Tan, 2007, p. 195):

> “a quality improvement program with a goal of reducing the number of defects to as low as 3.4 parts per million opportunities or 0.0003%.”

‘Sigma’ or Greek letter ‘σ’ means variation or standard deviation and Six Sigma is used for measuring how much process deviates from perfection (standard deviation), where 6 is the perfect sigma number (equals only 3,4 defects per million) (Klefsjö et al., 2006, p. 168).
Six Sigma is a "business strategy used to improve business profitability, to improve the effectiveness and efficiency of all operations to meet or exceed customer’s needs and expectations".

Important elements. Nowadays eight principles of Six Sigma is considered to be significant, namely: "(1) bottom-line results expected and delivered; (2) senior management leadership; (3) a disciplined approach (i.e. DMAIC); (4) rapid (3-6 month) project completion; (5) clearly defined measures of success; (6) infrastructure roles for six sigma practitioners and leadership; (7) focus on customers and processes; and (8) a sound statistical approach to improvement" (Näslund, 2008, p. 272). These principles correspond to some TQM values and principles, however in general are more rigid and focused.

The major element in Six Sigma is previously mentioned DMAIC cycle that consists of following phases:

- **Define.** Identify process or product that requires improvement.
- **Measure.** Identify factors that could influence the process and measure them.
- **Analyze.** Analyze the factors that require improvement.
- **Improve.** Implement improvement programs for products or processes.
- **Control.** Control the implementation process of improvement programs and verify efficiency of the program afterwards.

Moreover, there are a lot of tools and techniques used in Six Sigma within these phases. Kumar et al. (2006, pp. 408-409) summarized tools and techniques identified in the works of Six Sigma experts such as Hoerl (1998, cited in Kumar et al., 2006, p. 408), Breyfogle III (1999, cited in Kumar et al., 2006, p. 408), Harry and Schroeder (1999, cited in Kumar et al., 2006, p. 408), Pyzdek (2000, cited in Kumar et al., 2006, p. 408), Antony et al. (2003, cited in Kumar et al., 2006, p. 408), Snee and Hoerl (2003, cited in Kumar et al., 2006, p. 408), namely: DMAIC methodology, variability reduction, statistical process control, process capability analysis, Belt system (MB, GB, BB, YB), measurement system analysis, design of experiment, robust design, quality function deployment, failure mode and effects analysis, project management, regression analysis, analysis of means and variance, hypothesis testing, 5 why, cause and effect, Pareto analysis, change management tools, histograms, control charts, scatter diagram. We could argue that this summary not only incorporates tools and techniques of Six Sigma as we could notice methodologies in the list such as DMAIC methodology as well as techniques, namely statistical process control that could incorporate some tools. So we will consider this list as a summary of Six Sigma essential elements.
Aboelmaged (2010, p. 273) gives following examples of Six Sigma after thorough literature review (417 journal articles), namely: Pareto analysis, root cause analysis, process mapping or process flow chart, Gantt chart, affinity diagrams, run charts, histograms, quality function deployment (QFD), Kano model, brainstorming, etc. As for the techniques, author considered: statistical process control (SPC), process capability analysis, suppliers-input-process-output-customer (SIPOC), SERVQUAL, benchmarking, etc (Aboelmaged, 2010, p. 273).

One more extensive review of literature resulted in toolkit grouped for DMAIC steps (Koning & Mast, 2006, pp. 782-783):

- **Define**: Process mapping, flowchart, SIPOC model, Customer interview, Survey, Focus group, Customer observation, Customer complaint system, Voice of the customer analysis, Kano’s model, Quality function deployment, CTQ tree, tree diagram, CTQ flowdown, Affinity diagram, Interrelationship diagraph.
- **Measure**: Pareto chart, Failure modes and effects analysis, Determine operational dentitions for CTQs and requirements, Measurement system analysis, Gauge R&R study, Control chart, Process capability analysis, Capability index, Probability plot, Benchmarking.
- **Analyze**: Cause and effect or fishbone diagram, Brainstorming, Analyze Process map, flowchart, Value stream map, Data mining, Screening experimental design, Transmission of variance analysis, Five why’s, Exploratory data analysis tools, Cause and effect matrix, Statistical significance tests (chi-square test, t-test, (M)ANOVA, hypothesis testing, confidence intervals, regression analysis), Design of experiments, Logical cause analysis, Bootstrapping.
- **Improve**: Statistical model building, Design and analysis of experiments, Response surface methodology, Tolerance design, Robust design, Benchmarking, Brainstorming, Affinity diagram, Application of Must and Want criteria.
- **Control**: Statistical significance test, Process capability analysis, Mistake proofing, Poka Yoke, Control plans, Process scorecard, Statistical process control, Control chart, Pre-control chart, Gantt chart, schedule, Checklist, Audit, Failure modes and effects, Risk management, Lean manufacturing, Reliability engineering.

Moreover, in general for data analysis could be used following tools: Check sheet, Data collection plan, form, sheet, Bar chart, Pie chart, Box plot, Line chart, Histogram, Sampling, Descriptive statistics (Koning & Mast, 2006, pp. 782-783).

**Effects.** The main aim of Six Sigma is to gain high levels of quality and low levels of variability in the processes that result in lower costs and decreased defects (Näslund, 2008, p. 271). As the result, significant financial advantages could be gained after implementation of the program.

**Criticism.** The main argument against Six Sigma was expressed by Klefsjo et al. (2001, p. 33) stating that it has a lot in common with TQM except Six Sigma is more data oriented, disciplined and use more statistical tools. According to Klefsjo et al. (2001, p. 34) Six Sigma is more looks like methodology within TQM frame. Moreover, Proudlove et al. (2008, cited in Salah et al., 2010, p. 263) argued that there is no focus
on people and culture within the Six Sigma instead it focuses too much on details and tools.

Thus, Six Sigma is a set of quality improvement approaches and methods, such as statistical methods, and it demands that people in organization are trained to follow these methods. It possesses well structured and systematic methodology that could support TQM values.

5.3.2. Six Sigma in service industry

Six Sigma is widely applicable quality improvement initiative in service industry as well. Various representatives of the health-care, banking, education and hospitality sectors introduced this concept (Chakrabarty & Tan, 2007, p. 195). For example owing to Six Sigma J P Morgan Chase decreased flaws in account opening, payment handling and cheque-book ordering and achieved greater customer satisfaction. Within healthcare industry Six Sigma helped to low radiology throughput and cost for its procedures what resulted in soared up savings (Antony, 2006, p. 237).

Considering the underline idea of Six Sigma approach within service industries, it consists in the term sigma. Within the conducted research Antony (2006) expressed the reams sigma as “a measurement of a service performance characteristics deviation from its mean performance”. The main goal of Six Sigma approach was defined as reduction of variation in terms of tolerance or specific limits in terms of service performance characteristics (Antony, 2006, p. 235).

In terms of Six Sigma improvement process, after implementing in manufacturing area, Motorola adapted it to non-manufacturing areas of the firm that resulted in significant cost reduction (Dahlgaard & Dahlgaard-Park, 2006, p. 264). As a result following “Six Steps” of Six Sigma process were developed for non-manufacturing (administration/office/service) areas, namely: “(1) identify the product you create or the service you provide to external or internal customers; (2) identify the customer for your product or service, and determine what he or she considers important; (3) identify your needs (including needs from your suppliers) to provide product or service so that it satisfies the customer; (4) define the process for doing the work; (5) mistake-proof the process and eliminate wasted effort and delays; (6) ensure continuous improvements by measuring, analyzing, and controlling the improved process” (Dahlgaard & Dahlgaard-Park, 2006, p. 264).

Table 13 presents some tools and techniques for each stage of DMAIC cycle that commonly and widely used in service organizations (Antony, 2006, p. 241). In our case it could be perfect guideline for choosing specific tools within healthcare as it eliminates all possible tools applicable mostly in manufacturing industry.

For our study we would not consider presented in Table 13 list of techniques as they already incorporate some tools, for example, statistical process control uses control charts, histograms, root cause analysis, etc (Antony, 2006, p. 241). Moreover, it is easier to identify the role for tools and area of application compared to techniques which are broader in application and demand specific knowledge, skills and training. Also, as we
are aimed at considering only initial Six Sigma tools, we will not use SERQUEL tool designed for service organizations.

We could see that this grid of techniques and tools correspond to previously mentioned list of elements developed from Six Sigma experts’ studies. So, common elements are: *hypothesis testing, SPC (statistical process control), regression analysis, control charts, Pareto analysis, histograms, QFD (quality function deployment), route cause analysis (cause and effect analysis).* Moreover, some tools are similar to TQM tools, namely: *control charts, Pareto analysis, process mapping, brainstorming, Pareto analysis, affinity diagram, cause analysis (cause and effect analysis)* while other tools are more statistically oriented.


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<tr>
<th>Tools</th>
<th>Define</th>
<th>Measure</th>
<th>Analyse</th>
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Note: (1) = technique and (2) = tool.

Thus, we could identify some basic Six Sigma tools from Table that were in common with mentioned list of elements as well as tools that were in common with TQM list of basic tools plus add some new tools:

- *hypothesis testing*: used in order “to decide whether the parameters of a distribution have particular values or relationships. That is, we may wish to test a hypothesis that the mean or standard deviation of a distribution has a certain value or that the difference between two means is zero (Breyfogle III, 1999, p. 289)”
- **SIPOC (Supplier-Input-Process-Output-Customer) diagram**: process improvement tool used to “develop a high-level process diagram of the entire company” by depicting and describing 5 elements: Supplier, Input, Process, Output, Customer (Pande et al., 2000, p. 168).

- **cost-benefit analysis**: “is a formal method of analyzing the costs and benefits of each proposed course of action (Chakrapini, 1998, p. 189)”

- **KANO model**: used to identify and analyse customer requirements and group them in three categories Dissatisfiers, or Basic Requirements, Satisfiers, or Variable Requirements, Delighters, or Latent Requirements (Pande et al., 2000, p. 193).

- **regression and correlation analysis**: “encompass a family of tools that analyze the relationships among two or more factors (Pande et al., 2000, p. 168)”.

- **project team charter**: brief document used to outline project in terms of such aspects as problem statement, goal statement, constraints, assumptions, team guidelines, team members, preliminary project plan (Pande et al., 2000, pp. 239-246).

- **GANTT charts**: in this chart “activities are represented in sequence along the timeline where a box with a width equal to the time required to perform an activity represent that activity” (Al-Araidah et al., 2010, p. 61).

The definitions of other tools from the Table 13 were presented in the section 5.1.1. “TQM: initial approach”.

It should be noticed that some tools could be used in more stages than it is presented in Table 13 (Antony, 2006, p. 241).

Chakrabarty and Tan (2007, p. 204) presented several issues that could be perceived as limitations for successful implementation of Six Sigma within service industries. First, it was highlighted that it was rather challenging to gather and quantify data from service processes (Chakrabarty & Tan, 2007, p. 204). Second, there are difficulties in distinguishing service processes and sub-processes what could lead to problems within controlling the measure and controlling phases of six-sigma (Chakrabarty & Tan, 2007, p. 204). Listed challenges are rather considerable as it was stated that many service-oriented organizations used Six Sigma in order to establish and to map the key processes that are critical to customers’ satisfaction (Antony et al., 2007, p. 295).

Also, within the literature it was revealed that the main problem for successful implementation was the standardized DMAIC approach within Six Sigma that should be modified in alliance with service industry specifications (Antony et al., 2007, p. 307).

Hereby, Six Sigma could meet many challenges on the way to successful implementation within service industry. Processes that are the main focus for the Six Sigma are difficult to see and measure within service industry. However, if organization managed to adapt Six Sigma principles like some health-care, banking, education and hospitality organizations did, it would get considerable benefits namely customer satisfaction with service process and outcome of service, financial benefits, cost reduction, reduced variation etc (Chakrabarty & Tan, 2007, pp. 202-203).
5.3.3. Six Sigma in healthcare

Among many quality improvement initiatives, Six Sigma proved to be rather successful in service industry, particularly in the healthcare (Black & Revere, 2006, p. 260). Currently, Six Sigma is a leading quality improvement program in healthcare, despite the fact that many of its principles and methods were adopted from TQM (Black & Revere, 2006, p. 261).

Six Sigma found wide application in healthcare, because its principles of zero mistakes and errors are what medical care strives to achieve (Kwak & Anbari, 2006, p. 711). Nowadays the main areas of Six Sigma application in healthcare are direct care delivery, administrative support and financial administration (Taner et al., 2007, p. 330). The most successful and profitable Six Sigma projects were made in following major areas as (1) shortening the length of stay of patients; (2) minimising the use of materials and devices; (3) optimising the use of available capacities; (4) reducing the amount of staff; (5) improving cash flow (Heuvel et al., 2005, pp. 384-385).

In order to achieve patient and physician satisfaction, reduced overtime patients’ wait times and other examples of variability and wastes, DMAIC five-steps improvement cycle is suggested for implementation together with DFSS (Design for Six Sigma) methodologies (Taner et al., 2007, p. 330). DFSS is used after DMAIC for the purpose of re-designing processes if it is impossible to improve them.

Generally, Six Sigma represents several major concepts within healthcare: (1) critical to quality (quality characteristics essential for patient); (2) defect (everything that prevent delivering service according to patient’s needs); (3) process capability (what the healthcare process can deliver); (4) variation (what the patient sees and feels); (5) stable operations (ensuring consistent, predictable processes to improve what the patient sees and feels); (6) design for six sigma (designing to meet patient’s needs and process capability); (7) Lean six sigma (integration of Lean Thinking or speed and better flow of the processes by eliminating waste, and Statistical Thinking or understanding data, process and variation in processes) (Taner et al., 2007, p. 333).

The major obstacles for implementation of Six Sigma are defined as Belt System training that requires a lot of investments and efforts; availability and accessibility of data to measure defects or errors of processes that also could be difficult to identify; personnel resistance (Taner et al., 2007, p. 333).

Thus, Six Sigma concepts and methods can improve healthcare services for patients by optimizing business processes. In the healthcare industry, service quality depends largely on the human skills that are often very sophisticated to measure and control. Six Sigma is effective because it is based on an integrated approach that is aimed to improve person’s skills as well as aspects of the process of providing service. Although the Six Sigma program is considered to be a complex task in the health care industry, it could assist in getting quick results.

5.4. TQM, Lean and Six Sigma

In general, TQM, Six Sigma and Lean appeared as the result of quality revolution in Japan and started almost at the same time, however the development process of
concepts was quite different. For example, Toyota used principles of TQC (total quality control) before the actual birth of TQM and this in turn influenced the development of TQM (Dahlgaard & Dahlgaard-Park, 2006, p. 264) as well as Lean principles originated from Toyota Production System philosophy. The main difference among concepts is that Six Sigma focuses on decreasing defects and Lean focuses on eliminating wastes while TQM has both elements of quality improvement but the main focus on customer satisfaction. Thus, the main goal for TQM is customer satisfaction, while for Six Sigma and Lean it is not the prime focus but rather a related result (Andersson et al., 2006, p. 289-291). Considering process of achieving quality improvements, Six Sigma and Lean mainly use projects. At the same time, TQM approach toward quality improvement could differ, stressing the importance of commitment and involvement of personnel. Continuous improvement is another aspect that was emphasized in TQM and Lean, however Six Sigma stands for more radical changes.

In terms of methodologies and tools, TQM and Six Sigma do not differ considerably. Among many different TQM methodologies, improvement cycle is the most important one and similar to Six Sigma DMAIC (Andersson et al., 2006, pp. 289-291). Many researchers even stressed that DMAIC cycle basically repeats Deming wheel of TQM (Näslund, 2008, p. 272). So, from one point of view Six Sigma could be considered as an evolution of TQM that has integrated some other tools and methodologies (Time and Money Deliverables, the Six Sigma Metric, Critical to Quality Customer Focus, etc). (Dedhia, 2005, p. 569) However, Six Sigma is more developed and broader version of TQM in terms of its advanced methods and tools. Lean 5 principles also represent some kind of methodology. However, Lean methodology is not cyclical compared to TQM and Six Sigma as well as it stresses what should be done instead of suggesting how to improve. Considering lean methods and tools, they are focused at reducing wastes and are almost the same as in JIT (system process/value stream mapping, Kaizen, Five S, Kanban etc.) (Näslund, 2008, p. 272).

Regarding effects that could bring successful implementation of initiatives, TQM and Lean are aimed at customer satisfaction and financial benefit is correlated result. However, Six Sigma focuses in the first place on financial savings and after that on customer satisfaction.

Also, concerning criticism, the main problem with TQM is confusion related to its meaning and difficulties in achieving fast and tangible results. As for the Six Sigma it is usually seen as methodology for TQM, however, it has problems with creating organizational culture for full employee’s involvement into process. Lean also has some problems in dealing with human side as well as with its flexibility to changes.

In conclusion, quality improvement is the most important aim for healthcare institutions around the world (Pope et. al, 2002, p. 151). In spite of two decades of research there is still no clarity in effectiveness and appropriateness of different approaches (Pope et. al., 2002, p. 151). However, it is obvious that integration and adoption of some quality improvement approaches into one model could bring more positive results owing to the effect of synergy. Isolated and random efforts will not bring significant improvements as opposed to the set of principles, techniques and tools that are continuously influencing the process of creating a product (delivering a service) in order to maintain high level of quality.
After reviewing a literature on the main quality management initiatives, we can state that all three concepts have some differences and share several similarities at the same time. Hereby there is a potential for integrating three of them and developing model that incorporates set of TQM, Six Sigma, Lean tools and techniques. In particular, we will stick to the perspective that Lean and Six Sigma should be considered within TQM frame as it was explored in Klefsjö et al. (2001). This notion also supported by practitioner in quality management Micklewright:

“I’m a huge proponent of both Six Sigma and Lean Manufacturing. However, Six Sigma and Lean Manufacturing are business improvement processes that should be viewed as part of a continually improving quality management system (Micklewright, 2004)”.

To adapt this model to the healthcare settings, we will employ previously identified characteristics of service quality from providers and patients perspective.
6. Discussion: Combined Quality Management Model

The main purpose of the chapter six is to develop a combined quality management model which elements will be selected from TQM, Lean and Six Sigma on the bases of the aligned and combined perception of healthcare service quality (see Figure 4). The aligned and combined perception is the outcome from the empirical study and was presented in chapter 4.

First we will present elements of the aligned and combined perception of healthcare service quality that will be considered within the combined quality management model. Then we will proceed to the part of assembling the model by selecting values, methodologies and tools that will assist in managing previously listed elements of the perception.

6.1. Aligned and combined perception of healthcare service quality

The current section is intended to take a look at dimensions and sub-dimensions of the aligned and combined perception in order to depict some examples of them. Mentioned examples will be selected from issues expressed by both types of respondents: patients and healthcare service providers. It should be considered that within the combined quality management model we will treat elements of the aligned and combined perception without relating them to a party (patients or healthcare service providers) which has highlighted them. The reason is that selection of components of the model does not depend on this aspect.

According to the constructed aligned and combined perception that was presented in the chapter 4 (see Figure 4), we could depict three main categories such as technical, functional and administrative of healthcare service quality that should be considered by the model. Each of the categories has dimensions or sub-dimensions that are of interest of our quality management model.

Thus, technical category involves professional skills, service outcome and tangible quality dimensions. Within the professional skills dimension, there are following examples of aspects that could be approximate questions of quality management interest: up-to-date professional knowledge, right diagnoses, providing correct prescriptions etc. Service outcome could be related to patients feel themselves healthy after completing treatments, medicines help and other similar examples. Tangible quality dimension could be presented by such concerns as ability to utilize medical equipment in a proper and correct way, carry out medical tests in a correct way and others.

Next category of the aligned and combined perception is functional with the focus on interaction dimension. In the case of the discovered perception interaction dimension consists of seven sub-dimensions. Further there will be depicted approximate examples of each of the sub-dimensions. So, reliability sub-dimension could be described as the following: procedures should be delivered how they were promised without repeating and delays, medical help should be provided when a patient needs it most of all etc. Responsiveness sub-dimension deals with attentiveness of healthcare personnel, common language without complex terminology that healthcare personnel used in order
to help patient etc. Assurance sub-dimension could be presented as kind, nice behavior of healthcare representatives; their willingness to listen to a patient, healthcare service providers should be confident and do not check books in front of patients and other types of behavior and attitude that could assist in building feelings of trust and emotional support for patients. Empathy sub-dimension could incorporate for instance asking questions about patients’ personal information, history of patients’ illnesses or treating them in such a way that they feel that care is individual. Information sub-dimension refers to providing all kind of information to patients for example about their illness, the way of treatment as well as an explanation of medical and administrative procedures. Patient-centered sub-dimension could be treated as that healthcare providers take into account patients’ opinion, doctors and nurses ask questions about patients’ health condition during the process of treatment, patients should be motivated to follow prescriptions and others points. Efficiency sub-dimension could be presented in terms of the following examples: meetings with doctors should be longer than waiting time, doctors should spend reasonable amount of time on each person etc.

The third healthcare service quality category that will be involved into the model is administrative with stress on efficiency measures and access dimensions. Efficiency measures dimension could be explained by such examples as reasonable waiting time for meetings, serious cases should be proceed first comparing to others, efficient system of booking appointments etc. while access dimension could be concerned with the following: a hospital should provide an interpreter for making navigation within the hospital easier, a receptionist should provide correct information about times of appointment and places and assist in overall navigation in administrative procedures and others.

6.2. Combined quality management model

Considering dimensions and sub-dimensions of healthcare service quality listed throughout the previous section we will select values, methodologies and tools of quality management that are appropriate for specified aspects. Mentioned elements of quality management will be chosen from TQM, Lean and Six Sigma quality management approaches.

First we will present aspects that could be perceived as initial issues for implementing quality management initiatives such as the aligned and combined perception of healthcare service quality, TQM values. Then possible utilization of methodologies and tools from TQM, Lean and Six Sigma will be discussed. And afterwards on the bases of proposed initial issues, methodologies and tools we will construct a combined quality management model

6.2.1. Initial issues for quality management initiatives

In order to trigger a process of adoption of quality management models such as Lean and Six Sigma, basic TQM principles should be applied (Dahlgaard & Dahlgaard-Park, 2006, pp. 273-274). Since TQM could be defined as “a corporate culture characterized by increased customer satisfaction through continuous improvements, in which all employees actively participate” (Dahlgaard & Dahlgaard-Park, 2006, pp. 273-274), we could argue that mentioned quality management models require building a special corporate culture.
Taking into account the cornerstone for our combined quality management model, namely the aligned and combined perceptions of healthcare service quality, we could say that in our case corporate culture should be built with a focus on healthcare service quality continuous improvement in order to increased patients’ as well as healthcare service providers’ satisfactions. Thus, for the purpose of creating a corporate culture our model will include all five basic values obtained from TQM: customer focus, continuous improvement, focus on processes, employee involvement and leadership and top management commitment. These values were mentioned most frequently within the second literature review.

1. **Customer focus** – healthcare organizations exist for their customers, namely patients. Hence healthcare organizations should identify and understand patients’ current needs and forecast future ones, striving to satisfy and exceed their expectations and perceptions. Following this principle, organizations could benefit in such aspects as increased customer satisfaction and loyalty that could lead to a mutually beneficial cooperation.

2. **Continuous improvement** – should be considered as the constant aim of the organization. Thus, organization could benefit from continuous improvement of organizational capabilities, becoming more focused on innovations and achieving the strategic goals as well as flexible and responsive to identified opportunities.

3. **Focus on processes** - expected result is achieved more efficiently when activities and related resources are managed as a process. The most important benefits that healthcare organization could achieve are lower costs and shorter waiting time through effective use of resources, continuous improvement, clearly focused and prioritized activities for improvement.

4. **Employee involvement** – full involvement of healthcare organization’s employees will allow using all their abilities and talents for the benefit of the organization. As a result, motivated, dedicated and involved members will be more effective in achieving the goals of the organization and accountable for the results of their work. Also, they will be more inclined to participate in and contribute to the continuous improvement of the organization.

5. **Leadership and top management commitment** – it is important for leaders and managers to set goals for the healthcare organization and create environment in which all employees are involved in achieving those goals. Thus, employees who fully comprehend the goals of the organization are more motivated to achieve them. Also, ineffective communication among different levels of organization could be reduced.

It was decided to utilize all five the most frequently mentioned values of TQM due to the reason that all of them relates to dimensions and sub-dimensions from the aligned and combined perception. So, customer focus and employee involvement is important as first of all the aligned and combined perception is based on both patients’ and healthcare service providers’ perspective of healthcare service quality. Also all three dimensions of healthcare quality are connected with basic values and could be improved according to them.
Customers focus value could benefit technical category in terms of improving professional skills relative raising patients’ expectations (professional skills dimension) delivering such treatment which outcome will satisfied customers (service outcome dimension), acquiring up-to-date equipment in order to deliver advanced tests relative raising patients’ information awareness about medical innovations (tangible quality dimension). Regarding functional category, namely interaction dimension and all its sub-dimensions customer focus could assist in building such communications between healthcare service providers and patients (e.g. providing information, expressing attitude, expressing willingness to help in appropriate way etc.) that will bring satisfaction of the latter. If there is focus on customer then administrative category aspect will be improved. For instance there will be reasonable for patients waiting time (efficiency measures dimension) and flexible and convenient booking appointments system (access dimension).

Taking into account next value, continuous improvement, it assists constant monitoring all activities and processes of healthcare organization in order to detect any deficiencies within identified dimensions and sub-dimensions of aligned and combined quality perception. So, professional skills dimension could be improved by implementing regular training programs when it is required (e.g. requirements of new skills for operation on advanced equipment etc.). Tangible quality dimension could be improved by constant maintenance or upgrading of medical equipment. Also, continuous improvement will enable healthcare organisations to monitor customer satisfaction on regular basis in order to identify what sub-dimensions of interaction dimension should be improved.

In order to be customer focus and not allow depleting the healthcare system at the same time, healthcare organization should incorporate focus on processes in order to deliver high quality healthcare service in consistence with available resources. So, a patient’s visit to a hospital beginning from booking an appointment and finishing with receiving a final outcome from a treatment that he requires will be managed as one process. It will help to detect any problems within the process and achieve required outcome more efficient. If a whole patient’s visit to a hospital is considered as one process then it will be possible to detect if long waiting times (efficiency measures dimension) emerges due to unavailability of equipment (tangible dimension) or incorrect usage of equipment from personnel side (professional skills dimension). Hereby, such approach will help to achieve a final outcome (service outcome dimension).

Employee involvement value could bring the following advantageous for a healthcare organization. If such healthcare personnel as physicians, nurses and administrators are taken into account when defining what and how should be improved in terms of quality then there will not be resistance to changes. So, healthcare employees will perceive themselves as a part of quality management process and will be more motivated and responsible for complying with quality improvement processes. Moreover employee involvement could bring some benefits for delivering efficient care (service outcome dimension). Hence healthcare organization will be able to improve not only quality aspects that could be transparent for patients (e.g. functional category, visible administrative issues etc) but also to enhance underline aspects is sight of only healthcare personnel but still crucial for good service outcome (e.g. external management issues of administrative category such procedures, policies etc.)
In order to be able to apply all mentioned values efficiently, all employees should share and accept new values that have been introduced. Thus, it is top management duty to inspire employees to accept and to follow a new corporate culture.

Discussed values should be considered as a vision for healthcare organizations but not as specific actions or steps. Therefore healthcare organizations should always keep in mind that the patient is central for the organization and all activities as well as resources should be continuously improving while employees and top-management should be committed toward patients’ satisfaction.

6.2.2. Methodologies and Tools

Having built a corporate culture by introducing discussed values, next step is to select methodologies (i.e. roadmaps) that will help to achieve high quality healthcare service. Methodologies could be embodied after TQM values have been introduced within the company (Dahlgaard & Dahlgaard-Park, 2006, p. 272) and have been accepted by all its employees. In order to select methodologies we should consider specification of dimensions and sub-dimensions from the aligned and combined healthcare service quality perception.

Specific methodologies

So, for the purpose of achieving high quality of technical category, namely professional skills dimension, we suggest to utilize DMAIC cycle from Six Sigma supplemented by training and education element from TQM programs. It was decided to replace Improve step from DMAIC cycle by training and education element as professional skills could be improved by this action. In order to successfully utilize DMAIC cycle for enhancing professional skills it should be adjusted to its sub-dimension specification. Hence, this roadmap will involve the following steps:

1. **Define**: to identify required professional skills of personnel that are needed for providing healthcare service in order to satisfy patients;
2. **Measure**: to assess current professional skills and competences of personnel;
3. **Analyze**: to compare current level of professional skills and competences to required and identify what should be improved;
4. **Training and education**: to improve professional skills and competences that have been detected to be lower required level;
5. **Control**: to reassess improved professional skills and competences according to the required level. If it turns out that skills after the improvement are lower than the required then the process of improvement should be started again.

Possible tools for each step of the adjusted cycle could be selected from simple tools of TQM (see Table 12) and Six Sigma (see Table 13). Tools from Lean are disregarded as Lean itself is not applicable in this case. Thus, the following tools could be suggested to be applied:

1. **Define**: in order to define required level of professional skills healthcare organizations could use “focus group”. Focus group could consist of people that could be the most informed about the required level of knowledge (e.g. level of knowledge required for efficient usage of modern equipment etc.);
2. **Measure**: in order to assess current level of knowledge we could argue that there is no need in specific tools from TQM and Sig Sigma as ordinary tests for knowledge could be carried out;

3. **Analyze**: for the purpose of discovering what skills and competences should be improved brainstorming tool could be implemented. So, representatives of the focus group will compare current level of knowledge to the required level and will propose ideas about degree and ways of improvement. In order to summarize and to organize outcomes from brainstorming affinity diagrams could be employed.

4. **Training and education**: this step relates to improvement of skills and competences that could be achieved by attending special seminar, classes, training programs etc.

5. **Control**: reassessment of improved professional skills and competences could be done via conducting new exams. Test results will be depicted within control charts where the lower limit of deviation from the ideal result will be set.

The processing of improvement professional skills should be continuous. It means that skills and competences should be continuously monitored for requirements to be enhanced as the medical science is always dynamic. In order to motivate employees to accept education and training, top management should provide guidance and incentives to be engaged into an improvement process.

For improvement quality of **service outcome quality dimension** steps from both Lean and Six Sigma methodologies could be applied. An outcome of healthcare service could be impacted by various wastes (i.e. non-values adding) and other activities as medical results are achieving through a complex process of various activities, interactions and actions. For the purpose of achieving high quality of service outcome dimension, wastes or defects should be removed from the process while other aspects should be improved. Hence, we could utilize steps from both methodologies. The process of quality improvement of service outcome dimension could be presented to be the following:

1. **Define**: to define the whole process of visiting a hospital and treatment that incorporates all small elements for delivering healthcare service outcome that would satisfy patients;
2. **Measure**: to assess all elements (e.g. professional skills, equipment, provided information, waiting time etc.) of the process that could influence outcome;
3. **Analyze**: to decide how revealed problems could be treated.
4. **Improve**: to improve elements of the process that have positive effect (e.g. train and educate personnel for improving professional skills and for expressing a compassionate way of interaction etc.);
   *Flow*: to remove elements of the process that have negative effect (e.g. causes that provoke long waiting time and cannot be improved such as unnecessary tests, irrelevant information provided, queues etc.);
5. **Control**: to control if improvement of positively affecting elements and/or removing negatively affecting elements have contributed to patients satisfaction from received healthcare service outcome.

Taking a look at presented steps, it could be detected that steps from 1 till 3 and the fifth steps are steps from Six Sigma methodology while the step number 4 combined elements of both Lean and Six Sigma.
Afterwards, tools that will be adopted for each of the steps could be listed:

1. **Define:** in order to define the whole process, a flow chart could be used for visualizing elements of the process and depicting their sequence (e.g. the process of visiting a doctor for getting some prescription);

2. **Measure:** selection of tools for assessment of elements of the process will depend on how they could be measured. If a quantitative data could be gathered for measuring the element (e.g. amount of time spending for the whole process before patient will receive a prescription) then histogram tool could be employed. It will help to identify variations of time that has been spent on the delivering a prescription. If there is much variation in amount of time spent for providing prescription then probably there some issues that should be improved or removed from this process (e.g. time that have been spent for making irrelevant tests, equipment problem, personnel mistakes).

6. **Analyze:** factors that should be improved (e.g. time that have been spent for making irrelevant tests, equipment problem, personnel mistakes) could be analyzed by brainstorm activities in order to define how it can be done. Also on this step problems could be prioritized according to Pareto chart, namely to identify 20 percent of issues that cause other 80 percent of drawbacks for achieving good outcome (e.g. some deficiencies in administrative procedures that cause other problems such doctors cannot carry medical tests as they are over booked etc.)

3. **Improve:** selection of tools for improvement should depend on the features of identified problem. If it is an equipment problem regular maintenance should be implemented;

4. **Flow:** tools for this step should assist in removing non-value adding activities. For example flow chart could depict the whole process and it will be possible to detect flaws such as irrelevant medical tests. And further irrelevant tests should be removed from the process even if the patient demands more medical test. Only those tests should be used that affect the treatment of the patient, in other words, that create value;

5. **Control:** for the purpose of controlling changes within our example (i.e. time spend for providing prescription) control charts could assist in it. So, if after all changes have been done, time needed for the whole process of providing prescription fits into established limits of the optimal time, then it could be argued that changes were correct. If it does not fit then the process of improvement should be initiated from the beginning. Also on this stage patient satisfaction relative to received outcome could be assessed by focus group with various patients.

Next healthcare service quality dimension that should be considered is **tangible quality**. We propose to follow Six Sigma methodology for the purpose of efficient utilization of equipment as its methodology deals with this issue as a single problem while Lean could treat it as a waste or a non-value adding activity within the process. So if healthcare organization wants to deal with efficient utilization of equipment as a single problem then it is more appropriate to use steps of Sig Sigma. But in the case of dealing with a problem of efficient utilization of equipment within some process in a healthcare organization then it is more reasonable to adopt steps from Lean methodology. Approach toward adopting steps of Six Sigma or Lean methodologies to tangible quality dimension could be implemented in the same way as it was presented in terms of
the service outcome dimension case. Concerning tools for Six Sigma methodology, we could propose to use for example brainstorming at the stage of defining problems of efficient utilization of equipment, for example medical equipment downtime. On the step of measuring medical equipment downtime, histograms could be utilized in the same manner as it was presented in the case with service outcome dimension. For analyzing causes of medical equipment downtime it could be possible to utilize brainstorming that could be carried out by special experts. Improvement of medical equipment downtime could be achieved through implementing regular maintains. And for the purpose of controlling results control charts could be applied as well as in the example with the previous dimension. Regarding the case of Lean methodology, problem of efficient utilization of equipment for example medical equipment downtime will be treated as one of the causes of another drawbacks within a specific process. Thus, improvement of medical equipment downtime should be pulled by the process and it is important to select such tools that would help to create efficient pulling-system within the process. For example if some errors in functioning of equipment occur today they should be signaled to be emended right away.

The following aspect that will be discussed in terms of quality management methodologies and tools is functional category. Functional category is presented by interaction dimension within the aligned and combined perception of healthcare service quality. Scrutinizing such sub-dimension as reliability, responsiveness, efficiency, empathy, information, patient-centered and assurance within interaction dimension it could be pointed that all of them could be referred to healthcare service providers’ behaviors, ways of how they express their suggestions, how they communicate with patients, what attitude they show to their patients and other similar factors. Taking into account psychological features of proposed sub-dimensions and the fact that patients perceive them from extremely subjective points of view, it could be challenging and not rather reasonable to improve interaction through 5 Lean principles and/or Six Sigma DMAIC methodology as they propose rigid steps for improvement and require measurement of influencing factors. It could be supported by the fact that in spite that elements of interaction process can be identified (e.g. voice tone, behavior etc.) , it is difficult or even impossible to measure their influence owing to the fact that interaction process is deeply psychological and could be perceived by various patients in different ways. Hence, for the case of interaction dimension we could suggest to use training and education relative to healthcare service providers’ awareness enhancement about psychological aspects of interaction between human beings. We could suggest utilizing TQM and Six Sigma tools such as brainstorming or focus groups for supporting training programs. Acquired knowledge about psychological aspects of interaction could help healthcare personnel to adjust their behaviors, attitudes and other means of communication and interaction toward the individual case of each patient.

Considering the efficiency measures dimension within administrative category we could approach it from DMAIC methodology in order to improvement it. It should be mentioned that Lean methodology could be applied for this dimension as well. However in the case of Lean efficiency measures dimension will be treated within the whole process of a patient journey through the healthcare. We will present Lean approach later, as other dimensions or sub-dimensions of the aligned and combined quality perception will be involved. We will take into account waiting time for a meeting with a doctor as an example of efficiency measures aspect. DMAIC cycle steps and appropriate tools for each of the step could be described in the following way:
1. **Define**: to identify all steps and sequence of activities within a waiting time process. For this purpose flow chart could be used as the most appropriate.

2. **Measure**: to discover factors that influence waiting time (e.g. telephone calls, irrelevant administrative staff activities etc.) and measure them utilizing Gantt chart. This tool is very useful when you deal with timing issues as it depicts steps and activities within a process with attributed time for each of them.

3. **Analyze**: to assess factors that should be enhanced. Previously discussed Gantt chart could be useful on this step as well. Using its tool we can focus on activities of the process that takes the most of the time comparing to others.

4. **Improve**: in order to reduce the whole waiting time, the time of each part of the process should be reduced. So, we can suggest using brainstorming in order to generate ideas how to reduce time of reaching a call center operator at hospital, for example. At the same time Gantt chart could supplement this process by visualizing all steps within the process.

5. **Control**: after changes have been implemented it is significant to control achieved results. It could be done by control charts through comparing new received waiting time to optimal waiting time. If observed waiting time exceeds optimal level of waiting time further improvement should be carried out.

**Access dimension** of administrative category is concerned with navigation issues throughout the healthcare organization. In order to make personnel to be quick and responsive to patients needs to be able orienting within a healthcare organization, training and educations programs should be developed and implemented. This is the most appropriate solution because assistance in coordinating within healthcare system could be perceived more as interaction process that cannot be improved and measured as it was elaborated in terms of functional category.

**Five Leans principles in combination with specific methodologies**

It could be noticed that we did not utilize all Five Lean principles within any of dimensions or sub-dimensions. In case of Six Sigma DMAIC methodology dimensions and sub-dimension were treated as issues or processes that should be improved. Or in other words, DMAIC methodology was a roadmap for improving dimensions and sub-dimensions. In case of Lean dimensions and sub-dimensions will be treated as values that will help to satisfy customers, namely patients and healthcare service providers. Lean methodology will be directed toward identifying and removing/reducing problems related to dimensions and sub-dimensions. Moreover Lean methodology is not appropriate for applying in terms of improving single dimension or sub-dimension because its approach initially focuses on every of step involved in the whole process of service (Kollberg & Dahlgaard, 2007, p. 16). Dimensions and sub-dimensions could be perceived as elements of the healthcare service process that will be examined for existence of problems.

Further we will present Lean principles in terms of our aligned and combined perception. There will be the following steps:

1. **Specify value**: as we have already defined main patients’ requirements for the healthcare service they will be treated as values (see Figure 5). Additionally we have supplemented patients’ values by healthcare providers’ values. Thus, such approach will provide more comprehensive combination of values as it was
discussed before relative to importance of the consideration both patients’ and providers’ points of view.

2. *Identify the value stream:* within this step it is required to identify all activities and steps (e.g. booking an appointment, consulting, testing, surgery etc.) of specific healthcare service process (e.g. surgery: from appointment to a surgery to departure from the hospital) and identify value-adding and non-value-adding activities. Using process mapping tool, it is possible to map processes of patient visits, procedures and administrative processes and detect value-adding and non-value-adding activities within these processes;

3. *Make product/service flow:* next step consists in identifying obstacles that prevent continuous service flow. Regarding our case, obstacles could be defined in terms of our dimensions and sub-dimensions (i.e. values). For example, they could be medical equipment down time, incorrect test procedures carried out by medical personnel and others. Further all revealed obstacles should be eliminated. To define causes of these problems cause and effect diagram tool could be employed. For removing non-value adding activities such Lean tools could be applied as 5S to organize and standardize work place and Kanban tool to adjust demand to the capacity, pulling items or people when there is a need.

4. *Let customer pull:* this step of Lean methodology means that all activities and procedures of a specific healthcare service process should be provided to patients when they need it. So, patient should be able to have easy access toward making an appointment for a surgery, easy access toward tests, consultancies and etc. Such pulling principle will be resulted in reducing queues and delays within specific healthcare service process.

5. *Perfection:* The fifth step suggests eliminating obstacles continuously in order to achieve perfection. Concerning our case specific healthcare service process should be continuously be monitored for any problems. And these problems should be removed.

Scrutinizing presented five steps of Lean methodology we could suggest that within the step three we could use previously proposed methodologies for dimensions or sub-dimensions in order to remove revealed obstacles. Thus, if an obstacle is detected in terms of specific dimension or sub-dimension, roadmap proposed for this specific dimension or sub-dimension should be utilized excepting the first step as the problem have been already defined.

It should be pointed that the last proposed roadmap could be seen as the most comprehensive and could help in delivering high quality healthcare service in efficient way. However sometimes it could be complicated to identify some process for specific healthcare service (Young et al., 2004, p. 162), and the last road map could be rather sophisticated in this case.

Taking into account all roadmaps as well as other aspects such as tools, values, the aligned and combined perception of healthcare service quality that we have proposed, we constructed the combined quality management model depicted in the Figure 7. The model is based on the aligned and combined perception of healthcare service quality. Prior to proceeding to implementation of quality management methodologies it is important to build an appropriate corporate culture. Thus, healthcare organization should initially adopt five values of TQM.
Afterward, a healthcare organization could decide what methodology for quality management to select. If it tends to manage quality of healthcare service by incorporating all revealed dimensions and sub-dimensions within the aligned and combined perception then it should apply 5 Lean principles in combination with specific methodologies. In the case if a healthcare organization wants to manage quality of healthcare service in terms of specific dimension or sub-dimension it could adopt a roadmap proposed to this specific dimension or sub-dimension. Regarding selection of tools, they should be chosen in terms of a specific step of the methodology, specific features of improving problem and other factors for example such as availability of data for measurement, type of data, convenience of data representation etc. Within tools in the Figure 7 we have presented only those that have been mentioned in our examples. Healthcare organizations could select various other tools if they are needed for some specific case.
7. Conclusion

Within this chapter we are aimed to summarize our results from the study and present outcomes that answer our research problems. Also we will describe theoretical and practical contributions of our research. Suggestions for further research will be presented at the end of the chapter.

7.1. Conclusion of the research

Regarding our main problem of efficient quality management, we proposed the approach that would be able to help in overcoming some drawbacks toward achieving successful quality management in the healthcare industry. It was implemented by solving two raised research questions.

First of all prior to selecting quality management initiatives, it is important to understand what should be managed. In the case of the healthcare, the core point of quality management is quality definition. For the efficient management of quality, a healthcare organization should have a comprehensive definition of it that should relate to all significant elements of a healthcare service process. Therefore, both patients’ and healthcare service providers’ perceptions about healthcare service quality were suggested to take into account as these two parties consider healthcare service quality from different sides and their perceptions could be complementary to each other. Moreover these parties are crucial stakeholders in terms of the healthcare service. So, combinations of these two perceptions will provide completed and thorough picture of healthcare service quality. Hence in our study it was achieved by discovering the aligned and combined perception of healthcare service quality that was the answer on our first research question. Within the aligned and combined perceptions patients and healthcare service providers have common concerns in terms of treatment related aspects such as treatment and diseases related information, patients’ involvement into processes of treatment, building feelings of trust though communication that could assist in efficient treatment and equipments and tests required for good curing. Regarding supplementary aspects for the mutual picture of healthcare service quality, patients contributed more various aspects such as different sides of interaction, expected outcome from healthcare service and issues of administrative procedures while healthcare service providers added only requirement for appropriate professional skills. Thus, patients have rather wider insight on healthcare service quality while healthcare service providers focus more on specific medical issues.

Afterward discovered the most important aspects of the healthcare service will assist in detecting and selecting the most relevant and appropriate concepts, methodologies and tools of quality management for improving specifically discovered aspects of quality. Therefore, we developed the combined quality management model that was the second research question. It involves TQM values, methodologies and tools from TQM, Lean and Six Sigma that could be adopted for improving specific aspects from the aligned and combined perception relative to specific circumstances of healthcare organizations (e.g. available resources, objectives etc.). Such approach was proposed in order to allow a healthcare organization to concentrate only on implementing the most relevant quality management tactics and efficiently spend its resources and strengths. Concepts, methodologies and tools should be chosen not only from one quality management
models, namely TQM, Lean or Sig Sigma but should be selected from all of them relative to the revealed quality perceptions. It was suggested to follow a combination of concepts, methodologies and tools from various quality management models as there is no ideal model and all of them could have its own advantageous and disadvantageous. Hereby, a combination will enable to achieve an effect of synergism what is significant for efficient quality management.

In conclusion, efficient management of quality improvement occurs when there is a common understanding about what constitutes quality among personnel as well as among personnel and patients. Thus, concrete and common definition of healthcare service quality will assist in successful dealing with TQM approach which concepts are rather vague and broad if you do not know what should be managed particularly. Regarding Lean, common definition will assist in indentifying the most crucial values of a healthcare service process. So, it will allow a healthcare organization efficiently adopt Lean as values are the cornerstone aspects of this quality management initiative. Concrete and common definition of quality will provide Six Sigma with information about what should be measured in terms of quality as this quality management model should focus on the most essential aspects of service quality in order to bring good results.

7.2. Theoretical contribution

Considering the contribution of the conducted research to the theory, we could argue that we have proposed an approach toward quality management within the service industry. Thus, the area of our theoretical contribution is Quality Management for service providing organizations.

Even though this approach was studied relative to the healthcare industry, it is still could be applied for the whole service industry as well. The supportive reason is that the proposed approach is dealing with general aspects that are similar for both the whole service industry and specific cases of it. One aspect is quality definition since all representatives of service industries should be aware of the cornerstone of their quality management activities. Moreover all types of service industries have different participants (e.g. customers, employees, suppliers etc.) and it is significant to incorporate opinions of all crucial stakeholders about quality in order to have the most comprehensive definition for the purpose of efficient quality management. Another aspect is a combination of quality management concepts, methodologies and tools that have been selected from well-known quality management initiatives (e.g. TQM, Lean and Six Sigma) on the bases of specific quality definition. This approach of contrasting a combined quality management model could be applied for the service industries owing to the fact that (1) all three quality management models are applicable for any types of service providing organization and (2) a way of combination could be implemented for all of them due to general principals of the approach.

Concerning quality improvement initiatives and their application within healthcare settings, we could supplement existing literature by proposing new approach for their adoption. Previous studies showed that there is considerable obstacle for successful implementation of TQM, Lean and Six Sigma within healthcare namely resistance of personnel. Indeed, there is unique culture within healthcare organizations and it could be difficult to implement quality improvement models within it. Thus, our approach
suggests considering basic TQM values that should be widely applied and followed within healthcare organization in order to develop personnel awareness and acceptance of quality management initiatives. Also, by incorporating Six Sigma and Lean methodologies and tools in one model we could eliminate some deficiencies within these initiatives as they could complement each other.

Also we could argue that our research provided contribution to service quality literature as well. We managed to supplement existing dimensions and sub-dimensions of healthcare service quality by two new aspects, namely support for medical staff and team-work. These aspects could be applied not only in terms specifically service quality in healthcare. But they could be applicable for quality in such service industries that have several sub-cultures and/or require customers’ inspired involvement (e.g. education organizations, hospitality industry etc.)

7.3. Practical contribution

Healthcare organizations as well as other organization of service industries could utilize the proposed approach of quality management in order to be able to manage service quality efficiently and as a result to achieve the provision of high quality services. This approach gives a possibility to build quality management program that will be focus only on the most vital quality aspects of services in terms of the most crucial stakeholders’ opinions. Moreover organizations will get flexibility toward tailoring quality managing model in terms of their specific service quality components by selecting the most efficient quality management concepts, methodologies and tools. Another positive aspect refers to possible decrease of organization personnel resistance to introducing quality management model by involving their perception about quality of service they provide into the model.

7.4. Suggestions for further research

This study proposed the combined and aligned perception of healthcare service quality as well as the approach toward developing this quality improvement model which could benefit a lot if further research would be done.

Concerning perceptions of healthcare service providers and patients more detailed analysis need to be performed in order to reveal how demographic characteristics and background information of respondents could influence their perceptions of healthcare service quality. Moreover, empirical study could be done twice to understand how perceptions could change over time since the last visit to a healthcare organization. It could also be interesting to include into the healthcare providers’ a sample of a more diverse population, namely in terms of occupations and types of healthcare organizations and observe how different conditions could influence perceptions of quality. In addition, a research could be carried out regarding other categories of healthcare service quality. We were mainly concerned with broad and basic categories and dimensions and distilled our results of empirical study according to them. Hence, further research could multiply aspects of healthcare service quality and final aligned or combined perception of healthcare service quality will be more detailed and elaborated.

In terms of the quality improvement model, researchers could look at TQM, Lean and Six Sigma initiatives in more detail, namely in terms of their specific tools and
applications. In our study, we were focused on the most basic and popular elements of the initiatives. So, there is possibility for making them more applicable to a certain context.

Overall, additional research could be aimed at specific case (e.g. specific healthcare organization). Thus, utilizing the proposed approach the developed quality management model could be placed in the context of a certain healthcare organization taking into consideration all its characteristics.
8. Truth Criteria

In order to ensure soundness of our findings, we incorporated issues of reliability and validity within the conducted research. Owing to two research questions and consequently two aspects of study, reliability and validity were negotiated in both cases.

8.1. Reliability

Reliability refers to a possibility to discover the same outcomes by different researchers (Saunders et al., 2003 p. 252). It is essential to stress that reliability is considered to be strength of quantitative studies owing to time and context dependent features of findings obtained from qualitative empirical researches (Pope et al., 2002, p. 150). Regarding our case of the healthcare, we supposed that examined patients’ and healthcare service providers’ perceptions of healthcare service quality could dramatically change over a time period and could be significantly affected by a new context of studying environment, i.e. conditions during interviews, as we deal with a sophisticated physiological side of human beings. Reliability within the case of a combined quality management model is interconnected with patients’ and healthcare service providers’ perceptions. Changes in the latter will cause modifications in a composition of a combined quality management model as in this case new concepts and techniques will be needed for managing new healthcare service quality dimensions.

8.2. Validity

Saunders et al. (2003, p. 253) explained validity as an ability of researchers to get access to information and knowledge from subjects of their investigations and be able to reveal its meaning by analyzing language of subjects. Validity could be discussed from internal and external aspects. Considering the qualitative nature of our research and data collection method, namely interviews that we applied, we supposed that high internal validity within the case of healthcare service quality could be achieved. Thus, we managed to interpret collected data close to real ideas and attitudes of interviewees that was an objective of internal validity (David & Sutton, 2011, p. 638). High internal validity was aimed to reach by implementing a triangulation method. Collected data, i.e. interview transcripts and notes of patients’ and healthcare service providers’ answers, were scrutinized by two researchers independently in order to reduce interpretations’ biases. Internal validity of the second case of quality management initiatives was backed by the reached level of high internal validity of the aligned or combined perception of the healthcare service quality. We could state it due to the fact that techniques and concepts for the combined quality management model were selected on the bases of the revealed healthcare service quality perception. Moreover, we did not aim to test any quality management techniques or concepts. Therefore, they were not questions of the internal validity.

External validity within the case of healthcare service quality that represents generalizability of obtained data for the whole population from which our sample was drawn (David & Sutton, 2011, p. 638) was not our concern as we focused on a rather small number of interviewees. Our decision was directed by the method that we utilized for data collections. Conducted interviews required a considerable amount of time in order to get deep understanding of patients’ and healthcare service providers’
perceptions. Therefore, we did not cover enough people for a purpose of generalization. But we tried to increase external validity to some extent by investigating a diverse range of individuals, namely patients with different backgrounds and experiences, physicians, nurses, receptions and managers. However, it should be pointed out that an issue of validity is placed in doubt owing to a specific nature of the healthcare. The healthcare is a complex and dynamic organization where a comprehension of behaviors, decisions and other attitudes commonly deviate from one participant to another (Fitzpatrick & Boulton, 1994, p. 112).

According to the second case of quality management initiatives, its external validity is beyond our area of interest as well. First of all, the combined quality management model was based on the aligned or combined perception of healthcare quality that has not been generalized as it was deliberated previously. Also, in spite of the evidence that techniques and concepts within the combined quality management model are universal, theirs specific combinations cannot be adopted by any healthcare organization as its mixture was developed on the ground of the unique perception of quality applicable to the specific organization.


Appendices

Appendix 1: Questions for an interview with health service providers.

**Information about the research:** The core area of our research is Quality Management with the focus on the healthcare. The outcome of the research will be a combined quality management model for applying it in the healthcare. A model will be based on a common perception of healthcare service providers and patients on healthcare service quality. Hence, your opinion is very important for developing a model for managing quality within the healthcare. So, it will give possibility to take into account your expectations about healthcare services and will make them more efficient.

1) Gender: *Male / Female*
2) Age: ________
3) Occupation: ________________
4) Speciality: _______________
5) Number of years in practice: __________

6) We are very interested with what aspects do you associate quality in regard to your healthcare occupation?
   
   Follow-up questions:
   6.1) What do you mean by it?
   6.2) Could you give an example?

7) What factors could improve and damage a quality of the service that you provide?

8) Could you describe what constitute high quality meeting with your patients?
   
   Follow-up questions:
   8.1) In terms of patients contributions
   8.2) In terms of doctors/nurses/receptionist contribution

9) How should patients be involved in a process of treatment?
   9.1) To what extent should patients be involved in a process of treatment in order not to damage a quality of healthcare service?

10) How could you describe patient-centered healthcare service?

11) Let’s assume that diagnose is correct and a technical side of treatment/service delivering is on a good quality level.

   - What other aspects could make quality of service even better or could impact quality of service negatively?
Follow-up questions:

11.1) To what extent could environment (e.g. location of building, interior of waiting halls and rooms, availability of parking places, bus stop etc.) influence quality of service?

11.2) To what extent could administrative side (e.g. waiting list, billing, telephone services at reception etc) influence quality of service?

11.3) To what extent could a way of interaction with patients influence quality of service?
Appendix 2: Questions for an interview with patients.

Information about the research: The core area of our research is Quality Management with the focus on the healthcare. The outcome of the research will be a combined quality management model for applying it in the healthcare. A model will be based on a common perception of healthcare service providers and patients on healthcare service quality. Hence, your opinion is very important for developing a model for managing quality within the healthcare. So, it will give possibility to take into account your expectations about healthcare services and will make them more efficient.

1) Gender: Male / Female
2) Age: ________
3) Occupation: __________________

4) When have you visited healthcare last time? ____________________________

5) What hospital did you visit? District medical centre (Vårdcental)/ the main hospital

6) Do you often visit healthcare? ______________________________

   Follow up questions: 6.1) Do you visit it each week? _________________

   6.2) Do you visit it several times per month? _________________

   6.3) Do you visit it several times per year? _________________

7) What first associations originate in your mind when you think about quality of a healthcare service? ________________________________

Explanation: Healthcare service is diagnoses, treatment, communication with doctors, nurses, receptionist and everything that you associate with a healthcare organization

Note: Technical
      Functional
      Environmental
      Administrative
Follow up questions: 7.1) In terms of doctors, nurses or receptionists
7.2) What do you mean by this word?
____________________________________
____________________________________
____________________________________
7.3) Could you give an example?
____________________________________
____________________________________
____________________________________

8) Remember your last visit to healthcare.
- What have pleased you during the last visit to the hospital?
____________________________________

Note: Technical
Functional
Environmental
Administrative

- What have displeased you during the last visit to the hospital?
____________________________________

Note: Technical
Functional
Environmental
Administrative

9) What could you suggest to improve in healthcare in order to satisfy you to the
great extant?
____________________________________

Note: Technical
Functional
Environmental
Administrative

10) To what extent of a quality of healthcare depend on the person you communicate
with?
____________________________________
If Yes:
Follow-up questions:
10.1) What factors would inspire you to cooperate with doctors?
   What factors would inspire you to cooperate with nurses?
   What factors would inspire you to cooperate with receptionists?

10.2) What factors would prevent you from cooperation with doctors?
   What factors would prevent you from cooperation with nurses?
   What factors would prevent you from cooperation with receptionist?

Explanation: Cooperate – to follow instruction, to participate in discussion and decision making, listen, accept suggestions and other things

10.3) Do you have any expectations of how doctors/nurses/receptionist should communicate with you? What are these expectations?

10.4) Could you describe what constitute a high quality meeting with a doctor/nurse/receptionist?
10.5) Could you describe what constitute a low quality meeting with a doctor/nurse/receptionist?

If No:
10.4) Why?

11) Does your assessment of a quality depend on an location of building, interior of waiting halls and rooms, availability of parking places, bus stop around you?

If Yes:
11.1) How could it influence on you?

11.2) If you do not like an environment would you change it? What would you change?

11.3) What do you think, could environment impact on your perception of personal and quality of procedures?
   - How could it influence?
   - Could unfavorable environment make your perception of personal and quality of procedures more negative?
   - Could favorable environment make your perception of personal and quality of procedures more positive?

12) To what extent could comfortable and nice decorated waiting halls make your communication with receptionist better?
   To what extent could comfortable and nice decorated consulting room make your communication with doctors and nurses better?
12.1) How could you describe this link?

13) Are you ready to wait for a meeting with a doctor?
   - How could long waiting time influence your perception of quality of healthcare service?
   - Could you specify any aspects that could mitigate negative influence of a long waiting time?

14) Would you recommend healthcare with very qualified doctors and good technological infrastructure but low quality of an administrative side (long waiting list, not accurate billing, low telephone services at reception etc) to your relatives and friends?

   Why would recommend/ would not recommend?

15) If you have possibility to choose among several healthcare organization what organization would you select:

   - one with qualified doctors and good technological infrastructure but low quality of an administrative side side (long waiting list, not accurate billing, low telephone services at reception etc).

   or

   - another with average doctors and average technological infrastructure but a much better administrative side and better access to service? side (short waiting list, accurate billing, high telephone services at reception etc)

Select one/two statement the most important (put “+” in front of a sentence) and the least important for you (put “-“ in front of a sentence).

☐ Appearance of personal (neat, clean etc) (doctors or nurses, receptionists).

☐ Time spent for procedures, tests.

☐ Procedures are made without any distractions (doctors or nurses, receptionists).

☐ Feelings that everything in healthcare organization is directed to improvement of my health and nothing will harm me.

☐ During an interaction with (doctors or nurses, receptionists) I feel that promised services were delivered in a proper way.

☐ Doctors or nurses, receptionists are willing to help in terms of solving any problems.
Doctors or nurses, receptionists provide emotional support.

Doctors or nurses, receptionists are aware about my personal information and provide services in accordance with it.

I am involved in a process of developing a way of treatment and any decision-making in terms of it.

It is easy to access doctors or nurses, receptionists at any time.

Amount of time spent by a (doctor or nurse, receptionist) on me.

Doctors or nurses, receptionists explain to me complex technical information or provide with information about a clinical routine.

Select one/two statement the most important (put “+” in front of a sentence) and the least important for you (put “-“ in front of a sentence).

- Convenient waiting-halls
- Available parking
- Available various new clinical services
- Location of a medical center
- Cleanliness of a medical center
- Quality of provided food
- Quite environment
- A secure medical center
Appendix 3: Agreement for Participation in Interview within the Empirical Research for the Master’s Thesis, 30 credits.

I agree to participate in a research within the Master’s Thesis conducted by Anna Globenko and Zinaida Sianova, students from Umeå School of Business and Economics. I am aware that the aim of an interview is to gather information about my perception of service quality within the healthcare.

Taking part in the Interview, I fully accept the following conditions:

1. My participation is voluntary and I can withdraw myself from the research and/or stop an interview at any time;
2. I am aware that I will be recorded during the session and that notes will be taken;
3. My personal information will be treated in a confidential and anonymous way;
4. If a question is uncomfortable for me, I have a right not to answer on it;

I have read and understood provided information. I have had all my questions answered.

_________________________          ________________
My signature                          Date

_________________________          ________________
Anna Globenko                          Date

_________________________          ________________
Zinaida Sianova                        Date

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