

Role of quality in healthcare service provision process

Olkiewicz M.¹, Bober B.²

1. Department of Management Faculty of Economic Sciences, Koszalin University of Technology, Koszalin, Poland
2. School of Management and Banking in Poznan, Poznan, Poland

ABSTRACT

Introduction: The role of quality in achieving, improving, maintaining repeatable processes, service level guarantee patient satisfaction, determinants of hospitals.

Objective: Identification of the mechanisms consistent quality in the provision of services in the public hospitals.

Materials and methods: The study was conducted on a random sample of 104 public hospitals in the provinces of A, B, C. Author's questionnaire was distributed among 8975 participants of the medical staff. An analysis of the operating environment and documents, query literature. Was conducted individual in-depth interview with 540 medical experts from January 2007 to December 2011.

Results: Diagnosed public hospitals network problems in the implementation phase of quality management system for medical services: interpretation of the requirements of the standards, development of implementation documentation,

knowledge of procedures, standards. The work confirmed the theory that managers/Medical is responsible for the good/bad its functioning.

Conclusions: Building on the paradigms of science organization and management expanded the scope of the study on the analysis of the factors determining the quality management of medical services based on a family of ISO standards. Factors focused on human capital and structural describing the quality of intellectual capital, supplemented by a layer of organizational and functional entities. This made it possible to get an answer in terms of phenomena, which in the area of quality in the network of public hospitals can be observed. And suggests practical solutions. Indicated tools and capabilities to implement the principles of quality in shaping the satisfaction of stakeholders.

Key words: quality management system, patient, hospital staff, health care

***Corresponding author:**

Marcin Olkiewicz

Department of Management Faculty of Economic Sciences

Koszalin University of Technology

str. Kwiatkowskiego 6E, 75-343 Koszalin, Poland

Tel.:+0048 94 3439-116; Fax +0048 94 3439-113; e-mail: amolkiewicz@gmail.com

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INTRODUCTION

Quality management systems in compliance with the ISO 9000 requirements of standards are currently the most widespread management systems [1] in health care. Since 1993, these systems gradually entered into all spheres of life. Public hospitals as entities of social trust, where the quality of service provision processes has both educational and integrating role in terms of health behaviours [2,3].

From this perspective, we can talk about special meaning of a complex quality of work in medical environment. It allows the realization of scenarios for providing hospital services focusing on the increase of health values of stakeholders. Quality of service provision processes and investment in the development of medical environment's competences is a determinant of entities' successes within the framework of public hospitals; depending on utility components – user components, standards, procedures, guidelines, quality of hospital equipment and medication.

According to Krukowska-Miler [4], the quality of healthcare services is dependent on the realization of expectations in areas of accessibility and proportionality in relation to the pro-health needs of the prosumer, social acceptance and the economization of the health service. In contrast, the common denominator of the definition of quality and marketing strategy is to determine the ability to satisfy health-related expectations [5].

Furthermore, a determinant of complex quality and timeliness of service provision process is the possession of adequate resources. Implementation of a quality management system compliant with ISO 9001:2008 leads to the development of an intelligent organization. In accordance with the aim of the study, an important issue is to identify determinant for the quality of healthcare services.

For this purpose, the proposed approach aims at the analysis and evaluation of the intellectual capital's quality in public hospitals. The adopted concept is similar to the CAF method (*The Common Assessment Framework*) and management principles resulting from the standard requirements of ISO 9001:2008.

In accordance to the information listed above, the quality of management of provided services in public hospitals depends on mutual relations, engagement of the management staff, awareness and competence of the medical environment. For the purpose of discussion, it was assumed that individual human capital is understood as specific features of a doctor – interdisciplinary team members with a certain value expressed by knowledge, skills and abilities. The study included 8975 participants of 104 public hospitals functioning in the Warmia and Mazury, Pomeranian and Greater

Poland Voivodeships during the period from January 2007 to December 2011. Qualitative data was obtained by in-depth interviews with employees of these hospitals.

Concern for health - the management of public hospitals and study conducted within the framework, represent contribution to the discipline of management science. They are also the subject of further analysis and continuation of the study, due to the increasing importance of quality management in the provision of hospital services, dynamic development, a growing number of threats, cause significant changes in the functioning formulas of entities in the network organization. Used research tools contribute to the efficient diagnosis of the undertaken subject matter of the quality process in public hospitals.

Quality management in public hospitals – health care

Defining the term "*quality in public hospitals*" is a very difficult task because of its many aspects. The main bodies in the process of complex quality management in public entities are: managerial and medical staff, National Health Fund (NFZ), competition and State (Ministry of Health).

Implementation of the requirements for ISO 9000 standards, TQM principles and flexibility of managerial and medical staff enables the effective use of existing public hospitals' potential. Furthermore, on the basis of the process approach and the idea of continuous improvement, these standards determine the systematic growth in the quality of diagnostic and therapeutic processes. Pro-quality and complex offer of hospital services is perceived and understood as a "*Pure action, a behaviour aimed at helping the patient or providing him or her with advice, but the characteristic feature of this service is its intangibility, inseparability, impermanence and diversity*" [6].

Raising the qualifications of the medical environment, enrichment of the work processes' content and participatory management determine the pro-quality management of the service provisioning process in public hospitals.

In accordance with Donabedian [7] paradigm, the quality of service provision process management is based, among others, on the structure – resources, processes and results – effects, but none of these elements (separately realized) do not guarantee the repeatable quality of provided hospital services.

Krot [8] describes the quality in a dynamic manner (process of provision of health services in a repeatable quality) determined by exogenous terms (possessed technology, human resources). On the other hand, perceived quality of health services (where the patient obtains the product not as such, but as a solution to a health problem) is the result of his subjective evaluation and feelings.

However, whether the offered services are considered to be good in terms of quality, depends

primarily on the way in which the technical quality will be given (functional) (Tab. 1).

Table 1. Factors of the repeatable quality of services in the public hospitals' network

No.	Dimensions of the quality	Features of the potential (expected quality)	Features of the process (experienced quality)	Features of the result (obtained quality)
1.	Technical dimension of the quality – what can we offer to the prosumer?	Buildings and interior Technical and hotelier equipment Location of public hospital Professional qualifications of the medical environment Number, type and placement of personnel Quality certificates Prices of hospital services	Complexity of patient's medical documentation Course of service provisioning processes Understandability and accessibility of received information Additional services (e.g. Hotel, catering, etc.) Necessary length of hospital stay	Health status of the patient – post-hospital care processes Procedure in case of complaints and reasonable claims
2.	Functional dimension of the quality – how does the prosumer perceive us (criteria)?	Image of the public entity References Awards	Relations between participants of interdisciplinary teams Behaviours of the medical community towards patients culture of the service Service efficiency Atmosphere in the public hospital	Well-being and patient satisfaction Understanding of actions during the provision of hospital services Recovery time

Source: Table was created on the basis of: Schuhen A, *Marketing in der stationären Altenhilfe. Ein kundenorientiertes Freiburger Konzept*, Nomos Verlagsgesellschaft, Baden-Baden 1997, 64.

Health services are characterized by immateriality and the patient’s presence during their provision. On the other hand, this causes specific consequences in the process of quality formation, representing a sequence of actions – a chain for the creation of healthy values. It was stated [9] that the added value does not result from the offer, but from experience and co-creation, which is realized by the patient at a specific time and place, in the context of a specific (health) event. The internalisation of the patient knowledge and participation in the creation of pro-quality scenarios of hospital services creates an added value. Introducing to the network organization specific conditions allows, among other things, construction of knowledge environment and transparency. In order to implement the principles of TQM and quality management system requirements of the services provided in public hospitals, it becomes important to identify sources and determine the effects, which are reflected in the current economic situation of the entities.

One of important obstacles, which are present among public hospitals implementing the TQM philosophy and requirements of ISO 9000 standards, is not taking under account the fact that each individual entity and its environment are different from each other [10].

In these considerations it is also assumed that the organization of the network of public hospitals can reduce this important determinant. Furthermore, network structures are based not only on the quality management system, but also on other solutions similar to the family of ISO standards, which contributes to ensuring a repeatable, satisfactory level of the quality for stakeholders; including:

- ISO 22870:2007 – the research system concerning the patient care, which determines requirements for the quality and competence,
- ISO 13485:2003 – quality management system for medical products determining quality management systems, which can be used in design and development works of scenarios for provided services and service of medical products,
- ISO 14971:2012 - system for medical products – the use of risk management for medical products determining among others: methods for the identification of risks concerning the use of medical appliances in diagnostic and therapeutic processes.

In Polish hospitals, the most commonly used certificated quality management systems from ISO series are: quality management (ISO 9001),

environmental management (ISO 14001), management of occupational health and safety (ISO 18001), management of food safety (ISO 22000), management of information security (ISO 27001), medical laboratories (ISO 15189).

For the purpose of this work, it was assumed that measures of evaluating the effectiveness of the implementation of a complex quality management system in public hospitals are:

- Number of admitted patients,
- Time of admission,
- Provision of diagnostic sub-processes,
- Number of reported complaints,
- Timeliness,
- Continuity – complexity of processes concerning provided services.

Furthermore, qualitative factors of the intellectual capital determining adopted measures include, inter alia: knowledge, qualifications, personal culture, engagement and motivation of the medical environment in diagnostic and therapeutic processes. Determining control points and systematization of quality's evaluation criteria lead to the increase of stakeholders' [11] satisfaction in managing the process of service provision in public hospitals. Guidelines for the operation of network organization in addition to the ISO series 9001: 2008 also include the ISO 10015 standard and the ISO 10018 series, covering the commitment and competence of the whole staff in the process of quality management. The effectiveness of quality management systems largely depends on external consultants, so it is necessary to use ISO 10019 standards in the implementation process, because they have guidelines concerning selection principles and the information about methods of their use [12].

Quality has become synonymous of the twenty-first century, and organizational structure - functional public entities are concentrated on processes ensuring consistent repeatable quality, the determinant is:

- Family of ISO standards constitutes of, inter alia: quality management standard (ISO 9001:2008) – integrated management system platform. An important aspect is also the certification by independent entities, which are supervised by accreditation bodies. Management standards are revised with the dissemination of process approach and striving for the continuous improvement of management [13].
- CAF - Common Assessment Framework is a holistic approach in the self-assessment process, in which all problems included in the criteria, are linked together. On the other hand, cyclical nature of self-assessment leads to a conscious determination of areas, in which activities brought desired results and in which the efficiency was too small in relation to expectations, allowing the identification of reasons,

- IiP – *Investors in People* (this program was developed in the 90s by the National Training Task Force. National Training System in cooperation with the CBI - Confederation of British Industry, the TUC - Trade Union Congress and the Institute of Personnel and Development - the Chartered Institute for Personnel and Development) is a program aimed at the establishment of a standard for the human resource management associated with the development of an organization by the process of investing in personnel. An important premise of this standard is a process concerning the identification of possessed potential and developing the skills of conscious development of medical environment's intellectual capital.

Additionally, a determinant of quality management process in the network of public hospitals is the intellectual capital, in which IiP principles play an important role in the complex improvement of the provided hospital service quality. In contrast, investment in medical environment determines the process of achieving strategic goals by:

- Improvement of the quality in working environment and patient service,
- Reduction of costs and efficient management of possessed resources of entities from the network organization,
- Increase in qualifications, competence and commitment of personnel from particular entities in the network organization,
- Reduction of information asymmetry,
- Growing importance of motivation processes among participants of interdisciplinary teams,

Knowledge management processes in the network of public hospitals as a fundamental resource management, constitute the essence of effective management of quality services. In contrast, information technology - Decision Support Systems - SWD [14] promote virtualization processes, improve the quality and reliability of the data obtained, for example, in the community interview.

They are also a source of knowledge, reducing effort and cost [15] of diagnostic and therapeutic sub processes and at the same time reducing the decision-making risk. The consequence of these processes is an intelligent organization, which is a higher stage of the improvement process (public hospitals), which not only benefit from their resources of knowledge, but they also renew and update [16] it.

Therefore, for the purposes of the study it was assumed that the diagnosis policy management quality by evaluation of the quality of the intellectual capital as the factor determining the process of provision of hospital services, is about the complexity approach to the problem of quality. Rules of conduct are defined by law (operating

procedures), and by standards, instructions and guidelines for the medical staff behaviour. On the other hand, the lack of awareness of existing procedures, commitment, and relatively low focus

on the quality of diagnostic and therapeutic sub processes can be derived from the quality of the possessed intellectual capital (Tab. 2) by a network organization and structural capital (Tab. 3).

Table 2. Arrangement of medical personnel in the analysed voivodeships

No.	Voivodeship	Doctors			Dentists		Pharmacists	
		Number	Dr/10 thousand people	Double practice	Number	Dr/10 thousand people	Number	Number
1.	Pomeranian	7544	34.5	8	2174	9.9	1848	8.4
2.	Warmia and Mazury	3333	23.3	2	857	6.0	484	3.4
3.	Greater Poland	9475	28.2	52	2677	8.0	1893	5.6

Source: The above table was prepared on the basis of data from CSO and the Ministry of Health.

Table 3. Selected elements of the structural capital in the analysed voivodeships (indicator – 100 thousand people)

No.	Voivodeship	Population	Number of patients	Gamma camera	Linear accelerator	X ray with video channel	Computer tomography	MRI	
1.	Warmia and Mazury	2007	1426883	265059	2 /0.1	0/0.0	35/2.5	4/0.3	0/0.0
		2008	1426155	263607	1/0.1	0/0.0	38/2.7	4/0.3	0/0.0
		2009	1427073	285201	2/0.1	0/0.0	33/2.3	4/0.3	0/0.0
		2010	1427118	270100	2/0.1	0/0.0	30/2.1	6/0.4	0/0.0
		2011	1427241	265 975	3/0.2	0/0.0	33/2.3	6/0.4	0/0.0
2.	Pomeranian	2007	2203595	359646	5/0.2	7/0.3	53/2.4	18/0.8	3/0.1
		2008	2210920	340109	5/0.2	7/0.3	51/2.3	19/0.9	3/0.1
		2009	2219512	399360	5/0.2	7/0.3	56/2.5	17/0.8	4/0.2
		2010	2230099	416795	4/0.2	7/0.3	60/2.7	19/0.9	6/0.3
		2011	2240319	406 568	7/0.3	8/0.4	46/2.1	19/0.9	6/0.3
3.	Greater Poland	2007	3378502	691356	6/0.2	5/0.1	84/2.5	20/0.6	3/0.1
		2008	3386882	705756	6/0.2	5/0.1	82/2.4	23/0.7	2/0.1
		2009	3397617	765273	5/0.1	7/0.2	82/2.4	27/0.8	2/0.1
		2010	3408281	781568	5/0.1	7/0.2	73/2.1	31/0.9	3/0.1
		2011	3419426	786 807	5/0.1	7/0.2	81/2.4	34/0.1	6/0.2

Source: Own studies in the period from January 2007 to December 2011 and data from the Ministry of Health

The development of organization network is a consequence of improving quality management systems and knowledge in accordance with the PDSA (Plan-do-study-act) cycle. The market success of the network of public hospitals determines a number of important factors such as: qualified, interdisciplinary team, access to capital, information and modern medical technologies.

Human capital cannot be separated from people [17].

However, the most important thing is the way in which staff (the medical environment) are working together with the use of these factors, with what values are they guided with and what attitudes and behaviour do they manifest (in the process of ensuring consistent quality of hospital services [18]).

These determinants significantly shape the

comprehensive management of quality services in public hospitals.

MATERIALS AND METHODS

A query literature of the subject [19-22] was a model for the author's study questionnaire, covering thematic blocks of:

- comprehensive image of public hospitals,
- quality of work in the medical environment,
- complex quality management in the network of public entities.

This enabled the identification of the respondents' opinions concerning the above issues and obtaining answers to questions, for which it will be difficult or even impossible to get full knowledge on the basis of a document review or other

supplementary methods. The study analysed the working environment of the participants, including the access to tangible and intangible resources – knowledge & information. Information about the areas of the engagement of medical environment, in the process of building and improving comprehensive model of the quality management in public hospitals was also collected. Multifaceted and multidimensional nature of the compact quality management process in public hospitals is the subject of interdisciplinary studies. In accordance to the principle of triangulation adopted in research methodology, secondary data were used. The data were obtained as a result of:

- literature review – theoretical publications and works concerning the quality of health services,
- document review – analysis of relevant documents in the area of quality management of health services and legal solutions in the health care.

On the other hand, the primary data were obtained using an author's interview questionnaire with purposely selected group of respondents. Pilot research allowed a specification of questions – they have become clearer and more understandable for the respondents. The study was conducted from January 2007 to December 2011 based on methods, techniques and research tools, which were agreed upon after pilot testing from September 2006 to December 2006. It was carried out through the means of a categorized, authorial questionnaire. Furthermore, in order to widen the qualitative data, individual in-depth interviews (IDI) were carried out among representatives of medical staff, concerning the subject matter of thematic blocks included in the author's questionnaire.

Research sample was chosen in a random-layer way. Layers were public entities (small, medium and large [23]) (Table 4) as basic elements of health care system in Poland.

Table 4. Public hospitals study based on employment

No.	Size of a public hospital	Shared percentage		
1.	Small-sized hospitals (from 51 to 250 employees) in voivodeships	A	25	23,7%
		B	23	22,2%
		C	20	18,9%
2.	Medium-sized hospitals (from 250 to 500 employees) in voivodeships	A	4	4,5%
		B	19	17,9%
		C	4	4,1%
3.	Large-sized hospitals (over 501 employees) in voivodeships	A	1	0,79%
		B	5	4,9%
		C	3	3,01%
Total		104	100%	100%

Source: Table prepared on the basis of author's own studies in the period from 2007 to December 2011 and CSO (Polish: GUS) data

There were 509 public hospitals registered in REGON (Code (acronym formed from the Register of the National Economy). Identification of companies operating in Poland through a number code is mandatory. The resulting information collected in the territorial scope, ownership, industry and legal forms. As of 31.12.2007) [24], raising credibility and representativeness of obtained results. Selection of public hospitals took place with the use of stratification in accordance with the following criteria of differentiation:

- regional – a division into voivodeships,
- employment structure (number), while members of the medical environment (N_1) were selected by:
- place of work – hospital wards.

Testing area included randomly selected public hospitals operating in Warmia and Mazury, Pomerania and Greater Poland Voivodeship (18.75% of all voivodeships), determined in further considerations as A, B and C

(analogously). Anonymous questionnaires were sent to 104 public hospitals (20.43% of all public hospitals) in A, B and C voivodeships. The study was performed on a sample:

- N_1 . 8975 doctors representing the medical environment (7.33% of all doctors), who were selected in two stages; the 1st stage (5) of hospital wards [25,26] – internal medicine, gynaecology and obstetrics, neurology, orthopaedics and cardiology. The 2nd stage was the provision of work (in accordance with employment standards) regardless of the employment form, in favour of the analysed hospital wards. Studied population is, in accordance with the assumptions of the research procedure, similar, although small differences in public hospital were noted down as a result of changes in the health care system. Completion rate reached 81.20% (203 from 250). Representation of the medical environment taking part in the study is presented in Table 5.

Table 5. Structure of the surveyed population – medical environment

No.	Hospital wards	Seniority in hospital wards (years)					Education					Sex	
		Up to 5	>5-10	>10-15	>15-20	> 20	Without specialization	I ⁰	II ⁰	dr	Prof	W	M
1.	Internal medicine	2051	174	294	429	318	2051	397	686	657	74	2555	973
2.	Gynaecology and obstetrics	421	139	245	385	213	421	113	134	153	26	1058	331
3.	Neurology	249	198	209	184	167	249	299	354	398	56	1020	503
4.	Orthopaedics	583	193	229	294	174	583	322	374	429	31	199	767
5.	Cardiology	271	231	299	309	216	271	250	264	342	41	1076	493
Total		3575	935	1276	1601	1588	3575	1381	1812	1979	228	5908	3067

Medical Personnel: I0 - the first stage of a specific medical specialization, II0-second degree specific medical specialization, PhD - Doctor of Medicine, Professor. - Professor of medical science
Source: Own studies in the period from January 2007 to December 2011.

- N₂. 120 participants of the pilot research from the medical environment
- N₃ - 540 participants. The report was based on an intentional sample: from (36) selected public hospitals from A, B and C voivodeships, groups of 15 people were chosen including: directors for medical affairs, voivodeship health departments, professors, heads of analysed departments and voivodeship medical consultants. Interviews were carried out using an identical set of questions (9) that were arranged in a proper order, which allowed grouping them in adopted, thematic blocks. These interviews were held in the period of time from January 2007 to December 2011.

The usefulness of adopted research methodology and the scale of benefits achieved by determining the important factors in the management process of repeatable quality for provided services in public hospitals, was achieved by a consistent and systematic repetition of researches in the adopted annual cycles. Furthermore, it allowed to formulate the research problem in the form of a questions: *What are the knowledge resources of the medical environment in terms of factors determining a repeatable level of provided services in public hospitals?*

RESULTS

In the process of the complex quality management for medical services, each participant has a particular knowledge, skills and abilities, which must be used at his/hers position - also possess "tacit knowledge". The intellectual capital is also a

potential to entities, which later on translates into image and profit. However, for this to happen, there must be structural capital in public hospitals, which allows to transform knowledge into health-related benefits for the prosumer. It contains, among other things, all buildings, equipment, infrastructure and trading assets to enable the conversion of innovations emerging from the network operators to increase the quality of the patient care and satisfaction. The combination of these elements gives a full image of the intellectual potential of public hospitals (Tab. 2 and 3). The analysis of distribution of the structural capital conducted in the period from January 2007 to December 2011 of regions A, B and C, allowed to assess the extent of the problem in both the access to modern diagnostic equipment, as well as the level of quality of hospital services. In province A there is a lack of, among other things, a linear accelerator and MRI. This creates a risk for the continuity of the diagnostic process, and on the other hand increase in the cost of providing hospital services for both the entity and the patient (visits to another province, the additional fee for the use of equipment in private entities). Significant differences also exist in access to a CT scanner in A province in relation to the regions B and C.

Further research procedure was based on seeking answers from received thematic blocks in terms of knowledge of the important factors determining the quality of comprehensive medical services in the period from January 2007 to December 2011. The research problem was expressed in a form of a question: *What is the knowledge of the medical staff in public hospitals concerning the factors affecting the level of quality of medical services?* The analysis of respondent answers allowed to draw the following hypothesis: *The state of knowledge in medical environment in terms of the impact on significant factors for the repeatable level of quality in management of service provision process in public hospitals is satisfactory,*

while in managerial staff – relatively low. The boards of public bodies should draw conclusions: public hospital as a rewarding place to work is perceived negatively. Detailed information is summarized in the figures 1-2.

The effectiveness of the recruitment process is only 46% of the respondent answers. A lack of legal responsibility for the decisions was indicated by 34%. This is an important determinant, which may hinder the implementation of comprehensive quality systems in public hospitals. Availability, knowledge of procedures, standards was declared by 34%. The relatively low level - 47% of the respondents, indicated a lack of knowledge about the objectives and tasks of the entities/ hospital wards. This situation speaks for communication problems between the management of public hospitals and medical staff. Similar trends exist in adjusting the organizational and functional structure of public hospitals, for which 43% were in favour. They lack the flexibility to adapt to the standards and procedures for quality management process. Effective motivation policies has been appreciated by 52%. Positive atmosphere affects the increasing level of psychosocial competence for which 79% respondents were in favour of. This is an important factor in the process of sharing knowledge in the comprehensive quality of medical services. By the analysis of the "human factor" in public hospitals, including, among other things, a remuneration policy which is poorly assessed by 48% of the respondents: satisfaction with the workplace declared 59% of the respondents, the possibility of self-realization 43%,

whereas the possibility for a promotion -50%. Positively about competition, as a growth factor of the quality level, was chosen by 36%.

Negatively assessed was the level of expenditure on human capital development (improving expertise, e.g. the amount of residencies: 2011. 369 FTEs in 2012, a slight increase in 444), for which 54% members of the medical staff were in favour of. For a quantitative and qualitative deficiency of the constituent components of hospital services 56% of the participants of medical staff were in favour of. In times of the public finance crisis, management effectiveness of the process affects the situation of public hospitals in a rather significant way, financial management - an important element of the policy for which 64% of the respondents were in favour of. Another microeconomic determinant is the quality of provided hospital services and their timeliness, chosen by 68%. Important factors of a comprehensively managed process of provision of hospital services should include the experience of medical staff, for which 81% of the respondents were in favour of. Based on the analysis of statements of medical experts (IDI participants) additional information was obtained concerning the classification of important risk factors occurring in the process of comprehensive quality management. According to the responders the risk of major importance for the quality management process is pro-health policies 19.80% (local authorities - 3.98%, Ministry of Health - 6.67%, and the National Health Fund - 9.15%).

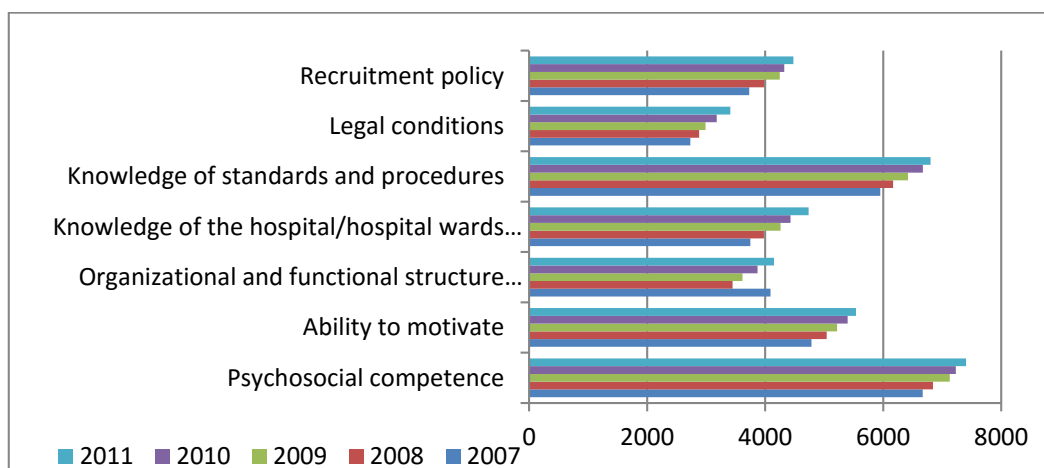


Figure 1. Criteria for assessing the quality level of the medical staff in analysed public hospitals
Source: Own studies in the period from January 2007 to December 2011

On the next place is formalism and indecision in the decision making process 16.90% and ineffective coordination of sub processes 14.40%. For technical risks 11.56% were in favour of. For the lack of implementation timetable 9.36%.

Obstruction in communication channels 7.29%, the risk of infrastructure 6.87%, for the lack of experience of the medical staff 5.01%, for the legal risk 4.65%, financial risks 3.16% and for the lack of adequate precision in the patient's medical records 2.89%.

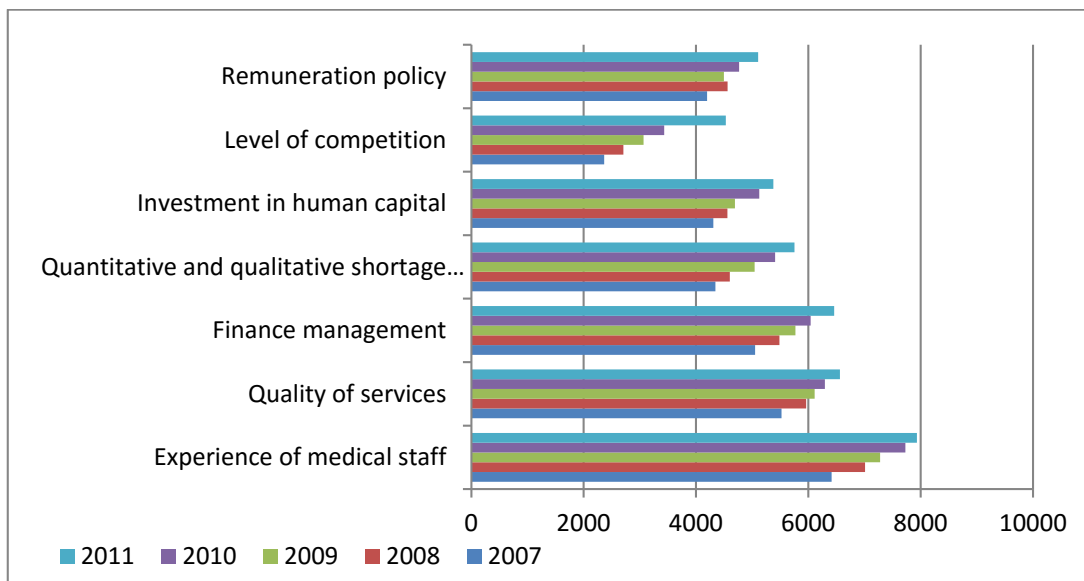


Figure 2. Quality determinants according to the medical staff of analysed public hospitals
 Source: Own studies in the period from January 2007 to December 2011

Difficulties in obtaining qualified medical staff 2.36%, but the risk of environmental protection only 1.11%. The least are higher powers with 0.83%.

The results are presented in Table 6 (where 1 means the risk of the highest importance in the process of the comprehensive quality management).

Table 6. Ranking of risk factors in the process of quality management according to the IDI participants

No	Types of risk	Place	% of answers
1.	Political risks, e.g. Health policy of local authorities, Ministry of Health, the National Health Fund	1.	19.80
2.	Formalism and indecision in the decision making process	2.	16.90
3.	Ineffective coordination of sub processes	3.	14.40
4.	Technical risk	4.	11.56
5.	No timetable for the implementation of the quality management system	5.	9.39
6.	Demotivational remuneration system	6.	8.53
7.	Obstruction in communication channels	7.	7.29
8.	Infrastructure risk	8.	6.87
9.	Lack of experience of medical staff	9.	5.01
10.	Legal risk	10.	4.65
11.	Financial risk	11.	3.16
12.	Lack of proper precision in the documentation	12.	2.89
13.	Difficulties in obtaining qualified medical	13.	2.36
14.	Environmental protection	14.	1.11
15.	Higher power	15.	0.83

Source: Own studies in the period from January 2007 to December 2011

Respondents could choose more than one answer, so the numbers do not add up to 100% Data analysis (Figure 3) shows that 85% believe that the use of appropriate procedures and standards are the key quality factors, while 76% of respondents believe that it is the modern hospital equipment. 79% of the IDI participants preferred innovative drug

therapies as determinants of the increase in the process quality provision of hospital services. A disturbing phenomenon is the lack of opinion declared by 6.54% of the surveyed medical experts.

According to the authors, these results reflect the situation in public hospitals.

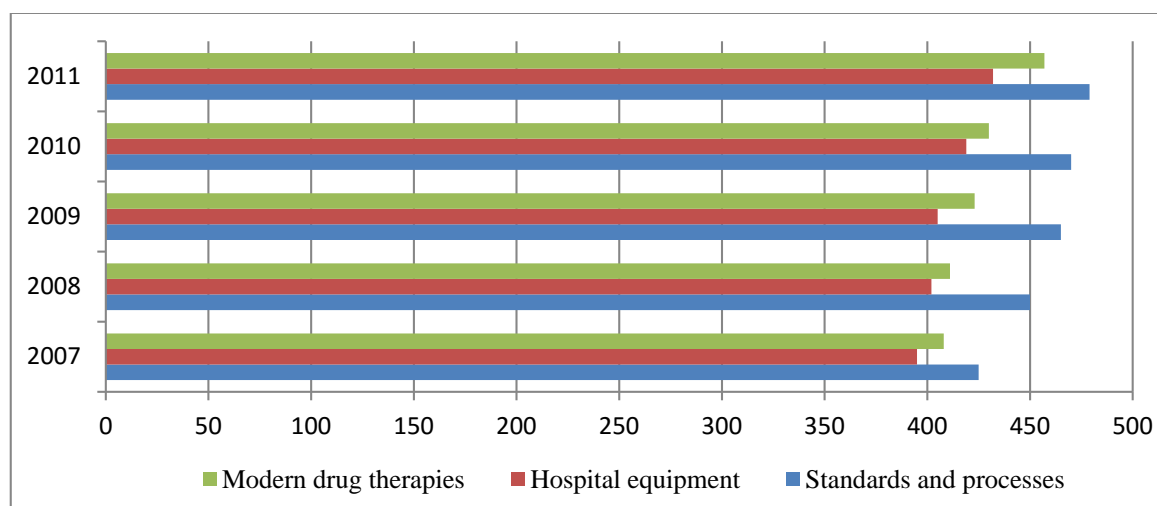


Figure 3. Quality determinants according to medical experts
 Source: Own studies in the period from January 2007 to December 2011

Reconsideration of the presented results leads to the conclusion that the synthetic approach can be summarized as follows:

- quality converted into value for both the public hospitals and a patient is the basis for the creation and development of the intellectual capital of medical staff,
- intellectual capital is formed on the basis of management of its resources, which may be the source and material of values of modern public hospitals and comprehensive quality management systems,
- therefore, only those assets, which are relevant to the strategic objectives of public entities and can be effectively used in the process of providing quality hospital services, are important.

Accession to the European Union – The EU has created not only the need of implementation but also to respect the EU standards. Adaptation of the network of public hospitals (medical environment) is a multistage and long-term process connected with the need to overcome a number of barriers occurring both in entities and their surroundings.

DISCUSSION

Public hospitals are the basis for the functioning of health care in Poland. The study, which was partially presented in this paper, including the results of previously conducted studies (An original research project: Socio-economic determinants of process management services in public hospitals. The study was conducted from January 2007 to December 2011 in three provinces in 104 public hospitals. The study involved: N1 - 8975 in the medical and N2 - 120 participants in the pilot group, N3 - 540 participants in individual interviews and N4 - 93 600 inpatients and N5 - 1000 participants of the pilot group) of authorial research, provided evidence to support the hypothesis. This

standpoint is consistent with pro-quality benefits, which are also presented in the works of K. Opole, M. and M. Możdzonek Dykowska [27]. In addition, it also provides evidence that the CAF system can have a significant impact on the level of quality in the Polish health care. In Finland, for example, the implementation of CAF rules in health care is supported through training, introduction of electronic tools the publication of information materials and creation of databases [28]. In Poland, the evaluation criteria includes personnel qualification, skills and experience, provided equipment and medical equipment, external evaluation confirmed with a certificate (Tables 2, 3).

It is difficult to determine the “right” level of quality for patients and the network of public hospitals. In the case of hospital services, entities compete with each other by providing services of varying quality and price, and patients express their preferences in the selection process. The quality of hospital services depends on the investments in the infrastructure (Table 3) of a network organization, and as a reflective relation – the level of required investments is a function of the service’s level. The sense of purpose, implementation of the public hospital network, the patient expectations and factors determining pro-quality requirements determine the complexity of the quality management process. Health satisfaction of a patient is a determinant of health care [29].

In the medical environment, there is a growing interest concerning the achievement of repeatable quality of provided hospital services. This is reflected in the growing importance of the determinants presented in the quality management for medical services in the conducted study from January 2007 till December 2011 in 104 public entities in three provinces. This reflects the relatively high awareness of the issue of quality management in public hospitals. Comprehensive quality

management system, based on ISO standards, is a complex and multi-faceted tool that requires adequate knowledge, preparation and commitment of personnel from public hospitals by:

- Implementation of procedures and standards in order to enable the improvement of the quality,
- Conscious realization of pro-quality policy in terms of trainings,
- Motivational tools, employee evaluation system and patient service standards.

Referring to the views of J. Solano [30], regardless of what the actual preferences of patients and physicians about the situation are, that which is to be considered normal is the one where preferences related to the time and method of provision of hospital services are converging. An important aim of the staff (managing public hospitals) should be to strive to build an organizational and functional culture of pro-effective, targeted value and organizational learning system. The results of the study, supplemented by qualitative data also confirmed the significance of the training processes and information activities to promote knowledge and shaping mutual understanding. In Poland there should be an organization based on the Canadian Health Services Research Foundation - CHSFR which aims to: *Encourage decision-making process based on scientific evidence [...], management and provision of health services through funding research, creating opportunities and transfer of knowledge with the intention to implement it, creating and fostering relationships between decision-makers [managers and politicians] and researchers* [31].

The analysis of respondent answers, supplemented by the data from IDI, allowed to draw a following hypothesis: *The state of knowledge in medical environment in terms of the impact on significant factors for the repeatable level of quality in management of service provision process in public hospitals is satisfactory, while in managerial staff – relatively low.* In addition, according to the results of K. Rogoziński work, the core of continuous quality in the public hospitals network is: *“A masterful control [...] and appropriate moral attitude, which conditions the achievement of the success [32]”* in the pro-quality processes of provided services and the increase of stakeholders' satisfaction.

CONCLUSIONS

Paradigms of organization and management sciences allowed expanding the scope of study on the analysis of determinants for the complex quality management for public hospitals based on the family of ISO standards. Factors focused on human and structural capital describing the quality of intellectual capital, supplemented by an organizational and functional layer, allowed to

obtain answers in the range of phenomena that can be observed in the quality management of public hospitals' network. All evidences and conducted observations allowed the, inter alia:

- Identification of needs for the network structure in the range of quality management and phenomena, which have positive/negative influence on the complexity of management process,
- Diagnosis of the status and condition of quality management in the network of public hospitals,
- Medical environment in diagnostic and therapeutic processes has certain obligations,
- Procedures, standards and recommendations applicable in public hospital are appropriate. However, there is a lack of personal responsibility among the medical environment's and lack of updating processes of mutual communication with the environment where
- The public opinion about the functioning of public entities has been improving. On the other hand, the medical environment strongly emphasizes on
- The quality of diagnostic and therapeutic sub-processes in the process of building a positive image and the growth of public trust.

In accordance with these objectives, results can serve as an inspiration for stakeholders in the implementation of repair and preventive actions in a process of complex quality management of provided services and be an important source of information for managerial staff – shaping quality management policies within the framework of public hospitals' network. Adopted concept of researches allows the identification of relation in the range of quality policies' realization and the use of specific models (tools, principles) for the complex quality management with an intellectual capital of the medical environment.

Moreover, these conclusions provided information that an important factor in the process of the organization network comprehensive quality management, which determines the quality perceived from the perspective of patients, are (inter alia) awareness, attitude and value of the medical environment. In the context of this effect, it is possible to put forward a hypothesis that the public hospital complex quality management should be based on the family of ISO standards, CAF method, IiP – Investors in People, supported by Information and Communication Technologies – ITC. In this perspective, they become important tools in support of desirable directions of development the quality of provided services by the network of public hospitals. Furthermore, they emphasize the need to measure achievements of the network organization and shaping processes of acquiring and managing information. Additionally, they are significant tools in the process of planned changes in the turbulent environment of individual entities.

- Study conclusions and the review of essential requirements for a quality management system in the provision of medical services can be summarized as follows:
- The implementation of the next formalized risk management decision-making system in public hospitals should be approached with special attention focusing on adaptation or including pre-existing solutions to new system requirements.
- In the case of systems based on the analysis, the focus should be on setting up rules and procedures on realistic and substantial threats to the quality process otherwise new solutions may not meet with the understanding and acceptance of the medical staff,
- Rational formulation of the objectives of public entities is an expression of adapting to the turbulent environment of quality management for medical services,
- Implementation of IT solutions increase the effectiveness of "the quality policy",
- Internationalization of specialized centres (e.g. oncological, neurological or treatment of burns) is an effective means of increasing the quality of services and use of economies of scale.

The diagnosis of the process management quality of services provided in public hospitals was also made based on the analysis of the human capital, resulting from the involvement of medical personnel and the quality of the work environment. The approach of TQM philosophy facilitates the implementation of pro-quality requirements that determine the effective management of areas in the provision of medical services.

In addition, respondents are pointing out the necessity of putting specific requirements before the quality management system, confirm the validity of the claim that it is a tool, and the ability to support it depends on what benefit a specified public hospital. Furthermore, respondents emphasize the lack of system's perception as a set of interrelated and interacting elements – a natural tool for the management of network organization and its development on the basis of PDSA cycle.

In conclusion, the aim of this work was to identify determinants of quality in the provision of medical services. According to the authors, this objective has been achieved through a study of knowledge concerning the quality present in process management services in public hospitals, as entities operating in market conditions. It presents the current status of public entities and proposes practical solutions, indicating the tools and capabilities to implement the principles of quality in the process of the stakeholder's satisfaction. It is also an important contribution to the deepening of knowledge about the shaping of the quality management of services in public hospitals. Its theoretical layer is based on a query literature and empirical verification of the important factors of

quality systems in the provision of medical services, extending the knowledge of this segment of contemporary economics of public hospitals.

Conflicts of interest

The authors declare that there are no conflicts of interest of this paper.

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