

Redefining the Conceptual Framework for Quality of Care

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Abstract

The purpose of this work is to provide a case study on quality care. More specifically, the study wants to confirm the following hypotheses: HP1, the attribution of quality features provided by the main actors involved in the multidisciplinary auditing process in healthcare; HP2, confirm the process characteristics related to quality auditing conducted at a multidisciplinary level in healthcare.

The study saw how the control tool is useful and necessary to carry out this evaluation continuous process, the survey of the most relevant variables, identifying the critical areas and the related corrective actions.

Keywords: quality care; healthcare; audit; multidisciplinary approach.

1. Introduction

The interest in measuring and improving the quality of health care in many countries of the world is growing due to the increase in health care demand, rising costs, limited resources and evidence of changes in clinical practice have increased (S. M. Campbell, Braspenning, Hutchinson, & Marshall, 2002; S. M. Campbell, Roland, & Buetow, 2000; Nottingham, Johnson, & Russell, 2018; Schuster, McGlynn, & Brook, 1998; Seddon, Marshall, Campbell, & Roland, 2001).

Quality has become an increasingly predominant part of our lives (Hall, 2004; Saad Andaleeb, 1998). People are continually looking for quality products and services. Quality healthcare is a human right (World Health Organization (WHO), 2017). Higher healthcare quality results in satisfaction for the clients (patients and the community in general), employees, suppliers and better performance for the organisation (E. Hart, 1999; O. Hart, 2003). If the quality of healthcare services improves, costs decrease, productivity increases and better service would be available for clients, which in turn enhances organisational performance and provides long-term working relationships for employees and suppliers (P.-M. Lee, Khong, & Ghista, 2006; Snoj & Mumel, 2002).

Some studies identify quality as an essential element for the administration of care, such as for the treatment of cancer. These requests led to a higher evaluation of services and clinical verification (Higginson, 1993; Higginson et al., 2003; McPherson & Addington-Hall, 2003; Payne, Large, Jarrett, & Turner, 2000).

The collection of information is essential, therefore, gathering information indirectly from the proxies later introduces potential problems regarding the validity of the relations the validity, in this context, refers to the degree to which the proxy accounts accurately reflect the experiences of the representing person. Now, little is known about the accuracy of proxy responses, even though inaccuracy can compromise validity and lead to incorrect conclusions. Because proxies are a significant source of information and are often the only source available for a large percentage of dying patients, it is crucial to understand

how and why their accounts may differ from those of the patient (Higginson, Priest, & McCarthy, 1994; Hinton, 1996; McPherson & Addington-Hall, 2003).

The following work increases and confirms what has already been defined by the Mosadeghrad studies (2012) concerning the characteristics related to the quality of health care, carried out at eight hospitals in the health system in Iran, involving 700 stakeholders interviewed. It also verifies the process defined in the study of Biancone, Tradori, Brescia, Migliavacca (2017).

This document aims to provide a case study on quality assistance. More specifically, the study wants to confirm the following hypotheses:

- HP1, the attribution of quality features provided by the main actors involved in the multidisciplinary auditing process in healthcare;
- HP2, confirm the process characteristics (Biancone et al. 2017) related to quality auditing conducted at a multidisciplinary level in healthcare.

The case study facilitates the deductive path linked to quality in health care; the contribution is aimed at the academic and professional communities.

On a scientific level, the research summarizes what is known and suggests some lines for further research to complete the study of the gaps. The document is structured as follows: the second section illustrates the research methodology, section three provides the discussion, while section four results, finally, section five concludes.

2. Methodology

The objective of the analysis is to propose a possible quality care approach and assessment path through the Piedmont Region case study. The study group has analyzed the existing literature, the Quality Care Plan of the Piedmont Region and subsequently a questionnaire was given to health personnel to gather the characteristics and application of quality care tools.

The study group for the definition of the questionnaire (Brescia, 2017) started from the review of the literature related to the processes of quality control in health and the audit processes within the health structures (Biancone et al., 2017). The construction of the questionnaire took place through a first review process based on the questions of the professionals followed by a second review that involved the involvement of health professionals in defining the contents through interviews according to the criteria established by the Delphi method (Hasson, Keeney, & McKenna, 2000; Hsu & Sandford, 2007). The preference of risk allocation identified from the survey was based on the understanding and perceptions of respondents. The Delphi technique was thus adopted to minimize the biases or personal subjective opinions, it uses a series of questionnaires interspersed with information feedback in the form of written summaries (Chan, Yung, Lam, Tam, & Cheung, 2001; Ke, Wang, & Chan, 2013). The questionnaire to be submitted to professional figures potentially involved in the quality care processes (doctors, administrative directors, health and complex structures, nurses, technicians and auditors) contains a first section aimed at investigating the salient characteristics of the interviewee and the company to which he/she belongs, and a second section aimed at evaluating the hospital risk management. The study group reviewing the questionnaire through interviews with experts in the field followed the indications proposed by Powell (2003). In order not to affect the collection of the obtained and available results (Alexander & Kroposki, 1999; Fiander & Burns, 1998; Hasson et al., 2000; Powell, 2003). The questionnaire definition process is present in the proceedings of the 2017 National AIDEA conference "Tendenze nuove negli studi economico-aziendali l'evoluzione dei rapporti azienda-società" held in Rome from 14 to 15 September (Tradoni et al., 2017) and is based on the approach presented at the GIKA 2017 Conference – Global Innovation and Knowledge conference which was then published (Biancone et al., 2017). The questionnaire and interviews were carried out between October 2017 and December 2017 in the Piedmont Region (Italy).

The project has mainly collaborated with the local health care company (Azienda Sanitaria Locale – ASL) of Alessandria, Verbania-Cusio-Ossola-Vercelli. The local health care company (ASL) is a public body of the Italian public administration, charge to the provision of health services. It performs the tasks of the National Health Service in each area. The analysis is qualitative through questionnaire and interviews, but some statistical results are interesting and provide important food for thought. All statistical analyses were performed using STATA V.13 (Stata Corp, College Station, Texas, USA, 2013) and p-value <0.05 was considered significant for all analyses (Palmrose, 1988).

Data in the case study method are collected by multiple means and consist of qualitative research techniques such as interviews, document analysis, various modes of observation anthropological strategies as well as the use of quantitative data satisfying four criteria of research: construct validity, internal validity, external validity, and reliability (Behling, 1980; D. T. Campbell, 1975; D. T. Campbell & Stanley, 1963; Cock & Campbell, 1979; Denzin & Lincoln, 1994; Eisenhardt, 1989; Kidder & Judd, 1986; Kirk, Miller, & Miller, 1986; Silverman, 2013; Stake, 1995; Yin, 1994).

The strategy adopted to guarantee the validity of the case study construct is the triangulation of the various data sources found thanks to the research, with the data of the interviews retrieved from the selected sample and the filing sources and direct participative observations and analysis of the guidelines and protocols of the Piedmont Region (Denzin & Lincoln, 1994; Silverman, 2013; Yin, 1994). Features linked to the guidelines and procedures adopted by the Piedmont Region's risk management system were analyzed thanks to the interview of Dr. Giulio Fornero, regional manager.

The analysis presents the requirement of internal validity as there is the presence of causal relationships between variables

and results because the degree of awareness of the change was not a standard value (Cock & Campbell, 1979; Glaser & Strauss, 1967; Silverman, 2013; Yin, 1994).

The analysis path has not affected the variables since the method starting from the construction of the questionnaire with the criteria established by the Delphi method and therefore leaving open and unconditional responses, working together with specialists and having access to internal documentation this has led not to affect the results. External validity is present in that there is an intuitive conviction that the theories adopted are generable as well as replicable and reliable (Cock & Campbell, 1979; Denzin & Lincoln, 1994; K. L. Lee, 2009; Numagami, 1998; Silverman, 2013; Yin, 1994).

The applied method involved the analysis of the legislation, protocols and, verification through interviews. The route can be replicated according to the approach presented Case Study.

Many events and circumstances have affected the region and despite the fact that Piedmont (Italy) has been used as a case study for other research subjects or other types of quality, it has been demonstrated by a response from the local government and institutions to address the hazard scenario and mitigate the quality to people, property and the environment by providing technical support to the emergency management (Arattano et al., 2010; Blengini, Brizio, Cibrario, & Genon, 2011; Pelosini, Bovo, & Cordola, 2011).

About our research the final assessment concerning the year 2015 (last available data), the Piedmont Region confirms its position in the first places in Italy for the quality of health services, also gaining a position compared to the previous ranking (Agnoletti, Bocci, Iommi, Lattarulo, & Marinari, 2015; Bacci, 2015; Ivaldi & Burlando, 2017).

The first step is the realization of the verification tool, which is a questionnaire consisting of six open questions, whose purpose is to demonstrate the presence of the nine characteristics of the control that make up the theoretical model. The questionnaire is to be submitted to professional figures potentially involved in the audit processes, which therefore represent the group of "experts" referred to in the explanation of the Delphi technique. The questions closely related to the verification topic are preceded by another six questions of a cognitive nature necessary for the purposes of the sample description (professional role, years of experience in this role, gender, type and name of the structure to which the structure is the primary source of financing).

The first phase was that of administering the instrument to a panel as described below (Table 3). A mixed sample was considered for each type of structure and funding, in addition to this sample, some figures were selected for the review of the questionnaire through interviews.

The next phase saw the administration of this tool to other health professionals working in different ASLs of the Piedmont Region; the choice lies in the desire to start from a homogeneous health system by structure, organization and type of funding, in order to facilitate the analysis some data. The analysis of this further phase will be discussed in the next chapter.

3. Discussion

The control activity is a tool for quality assurance and is divided into various cases, in order to be able to monitor all aspects of the health service, ranging from economic-financial objectives to ethical and social objectives. Consequently, in the health sector "the audit activity should focus on a holistic approach, where the whole activity is verified and kept under control, able to meet the organization's management needs", thus favoring the maximization the outcome of health and the results both organizational and financial. From the analysis of the literature it emerges that the control activity consists of nine characterizing elements:

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1. Periodicity
2. Relevance
3. Accountability
4. Cyclical
5. Thoroughness
6. Task separation
7. Independence
8. Competence
9. Structure

The innovative contribution of this work: explore the topic, analyzed first theoretically (Biancone et al., 2017), through a case study in the desire to confirm the model.

It is a theoretical model, which asserts that the presence of the nine elements mentioned above is essential to guarantee the quality of services. Therefore, the objective of this study is to analyze the outlook that had the administration of the verification to the officials of different ASL of the Piedmont region, in order to demonstrate if the realized theoretical model has a summary in local reality analyzed and if the elements it is composed must be confirmed, expanded and/or redefined.

The theoretical framework used in order to ensure the meeting of quality healthcare requirements can be individuated as the "P.R.A.C.T.T.I.C.S." approach, whose name is derived from the acronym of the assumptions of the framework. In table 1 it is possible to see the summary.

Assumption	Description	Autors
Periodicity	Audit is planned, must be recurrent and continuous, performed step by step, and this leads to the necessity of conducting periodic audits, whatever the typology of the audit is under consideration, in order to achieve the best result with limited (time) resources.	(Arter, 2003; Johnson, 1997; Moeller, 2009; Russell, 2012; Van Steen, 1996)
Relevance	Auditors cannot consider all the aspects of the organizations' activities and must perform risk management practice to cover the uncertainties and potential events.	(Arena, Arnaboldi, & Azzone, 2010; Biancone, Martra, Secinari, & Iannaci, 2018; Hopkin, 2018; Power, 2004, 2007)
Accountability	The individuation of the accountable subject in each step of every audit activity, both for the auditor and the auditee, must be conducted thoroughly, in order to keep all the components of the organizations aware of their risks and responsibilities and consenting a better overall performance.	(Gendron & Bédard, 2001; Gendron, Cooper, & Townley, 2001; Kurland, 2017; Mutchler, 2003)
Cyclical	The audit process is divided into three separate phases of activity: programming, executing, controlling that are recurring and continuous.	(Bristol, 1993; Chou, Du, & Lai, 2007; Khuri et al., 1998; Puddu, 2011)
Thoroughness	Audit must cover: management of organizations, being them related to law, financial aspects, clinical or medical occurrences, process necessities under the relevance assumption.	(Boekeloo et al., 1991; Cunningham, Neville, & Norman, 1996; Ferlie & Shortell, 2001; Paine, 1994)
Task separation	Each control task and the related responsibilities must be cross check and separation amongst relevant areas of accountability in order to improve the quality of the audit activity, and reduce risks related to errors, manipulation or frauds.	(Beasley, 1996; Bedard & Johnstone, 2004; Norman, Rose, & Rose, 2010)
Independence	An effective independent audit Committee is seen as one of the determinants of audit service effectiveness.	(Al-Ajmi, 2009; Cohen & Sayag, 2010; DeZoort, Hermanson, Archambeault, & Reed, 2002; Dhaliwal, Naiker, & Navissi, 2006)
Competence	The expertise of the auditors in the area of analysis and the observance of high-quality standards is the main driver of service quality is driven audit.	(Butterworth & Houghton, 1995; Eichenseher & Shields, 1983; Johl, Jubb, & Houghton, 2007; Shockley & Holt, 1983)
Structure	Due to the complexity of the healthcare organization, and its diffused professional ties, the different typologies of the audit must be well structured, and must communicate between each other, in order to achieve a better understanding of all the areas audited.	(Ferlie & Shortell, 2001; Hannan & Freeman, 1984; Palmrose, 1988)

Table 1. The quality healthcare requirements, "P.R.A.C.T.T.I.C.S." approach

Source: Our production

In the previous research (Mosadeghrad, 2012) the 181 attributes that a health service should have in defining quality were illustrated and it was said that these refer to five categories of reference: Environment, Empathy, Efficiency, Achievement of objectives, Effectiveness (Biancone et al., 2017). These same macro classes were used to categorize the responses of the employees of the Piedmontese ASL. Each interviewee had to indicate all the criteria that he considered useful for achieving quality in the managed service, for this reason, unlike the previous questions, the numerical results and percentages do not refer to single responders, but to the number of times each attribute in the respective macro class it has been mentioned. In this regard, it is useful, for the purposes of our work, to report the categorization of attributes in the respective macro areas (Table 2).

The attributes related to the environment are those most perceived as guarantors of quality in service provided, followed by Empathy, achievement of objectives and effectiveness, however, the less stated criteria are those related to efficiency.

4. Results

4.1. Sample description

Identifying the subjects in such a way as to represent a homogeneous sample was the first step.

The study has not verified the effects of any future changes in personnel during the period in which the research has investigated but it has coded the entire sample, and the result is

the following mapping (Table 3, 4).

Each role has been reviewed as well as years of experience, kind and Membership.

Subdivision by role: one third doctors, one third administrative, one fourth professional and, as expected, a smaller number of directors of complex structure (which are also less represented within companies).

Years of experience: better represented those who have more years of experience is a result understandable as knowing the company this part of responders tend to be more likely to respond, have more years of experience and stress behind but above all there were more competitions and entries in the ASL compared to what has occurred in the last 10 years (certainly for the administrative but also for the doctors). In table 4 it is possible to see the description of the sample stratified by gender.

The percentages are to be read in the column: among the males, almost half of the responders are medical and the remaining 60% divided evenly among the other 3 categories. Among the females, there is instead a prevalence of administrative and are less represented the Guidelines of S.C. Any differences are not significant.

Similarly, the other two variables can be read.

4.2. Statistical results of the research

The results were obtained using descriptive statistics and quantitative analysis carried out through univariate and multivariate analyzes. The statistical processing of the answers

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ENVIRONMENT	Growth	EMPATHY	Loyalty	Necessity	Satisfaction
Acceptability	Health	Advisability	Passion	Performance	Service
Accessibility	Hospitality	Affability	Patience	Reasonableness	Stability
Accreditability	Hygiene	Authenticity	Pleasantness	Reliability	Systematic
Adaptability	Innovation	Authority	Punctuality	Reputation	Transparency
Adequacy	Openness	Availability	Respect	Result-oriented	Uniqueness
Appearance	Price	Awareness	Response	Uniformity	
Appreciably	Privacy	Benevolence	Responsibility	Viability	EFFICIENCY
Assurance	Professionalism	Caution	Sensitivity		Competitiveness
Attitude	Purity	Cheerfulness	Speed	REACHING OBJECTIVES	Efficiency
Attractiveness	Quiet	Communication	Support	Cleanliness	Measurable
Beauty	Reactivity	Compassion	Value	Comparability	Predictability
Brightness	Readability	Comprehensibility		Completeness	Profitability
Capacity	Reliability	Confidence	EFFECTIVENESS	Conscientiousness	Relevance
Care	Purity	Confidentially	Accuracy	Consideration	Repeatability
Choice	Quiet	Cordiality	Applicability	Continuity	Reuse
Color	Reactivity	Correctness	Appropriateness	Cooperation	Robustness
Comfort	Readability	Courtesy	Autonomy	Coordination	Solvency
Competence	Reliability	Credibility	Care	Coverage	Sustainability
Convenience	Safety	Empathy	Commitment	Eligibility	Usability
Creativity	Size	Honesty	Compliance	Enthusiasm	
Duration	Skill	Humanity	Consistency	Equity	
Ease	Structure	Informative	Effectiveness	Extensibility	
Environment	Support	Intensity	Equilibrium	Individuality	
Excellence	Training	Interest	Ethics	Objectivity	
Existence	Tranquility	Involvement	Exclusivity	Parity	
Facility	Usability	Joy	Fault-free	Patient-centeredness	
Familiarity	Utility	Justice	Integrity	Precision	
Flexibility	Validity	Kindness	Intelligence	Presence	
Formality	Visibility	Listening	Legitimacy	Reliability	
Functionality		Love	Motivation	Result-oriented	

Table 2. Characteristics of the quality of the health service divided by macro category

Source: Our production

	N	%
Role		
Doctor	30	31.91
Complex structure Manager	12	12.77
Administrative	30	31.91
Professional	22	23.40
Years of experience		
< 5 years	15	15.96
5-9 years	4	4.26
10-19 years	27	28.72
≥20 years	48	51.06
Kind		
Male	32	34.04
Female	62	65.96
ASL Membership		
Alessandria	29	31.52
Verbania-Cusio-Ossola	54	58.70
Vercelli	6	6.52
Others	3	3.26

Table 3. Sample Description

Source: our production

	Gender Male N (%)	Female N (%)	p
Role			0.090
Doctor	15 (46.88)	15 (24.19)	
Complex structure Manager	5 (15.63)	7 (11.29)	
Administrative	7 (21.88)	23 (37.10)	
Professional	5 (15.63)	17 (27.42)	
Years of experience			0.141
< 5 years	7 (21.88)	8 (12.90)	
5-9 years	0 (0.00)	4 (6.45)	
10-19 years	12 (37.50)	15 (24.19)	
≥20 years	13 (40.63)	35 (56.45)	
ASL Membership			0.206
Alessandria	10 (32.26)	19 (31.15)	
Verbania-Cusio-Ossola	19 (61.29)	35 (57.38)	
Vercelli	0 (0.00)	6 (9.84)	
Others	2 (6.45)	1 (1.64)	

Table 4. Description of the sample stratified by gender

Source: our production

collected led to obtaining the following results. In table 5 it is possible to see the evaluation of clinical risk and elements of risk management.

The analysis of the clinical risk assessment and the risk management elements was submitted to the sample that presented a variable that the study did not initially put in the mapping: awareness.

In the sample 1 subject in 3 reports a high frequency of adverse events in his company. Few have answered questions related to the existence of a corporate reporting system and company procedures. Among these, all of them declare their existence. It is possible that many did not answer the question

because, regardless of the existence or not, they declare of not aware of it, this is an important aspect to stress.

Less than half of responders stated that the division of tasks is correct; a third believe that the relationship between one's job and the level of responsibility and autonomy is not adequate. 60% consider the request to perform tasks that go beyond their strict competence to be acceptable.

Criteria related to the quality of service: the environment is the criterion most associated with the guarantee of quality of service, followed by empathy and the achievement of objectives. The least reported criterion was efficiency: this is an aspect that could probably be improved by empowering staff through tra-

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	N	%
Perception of high frequency of adverse events		
Yes	26	32.10
No	55	67.90
Company reporting system presence		
Yes	33	94.29
No	2	5.71
Presence of company procedures		
Yes	28	96.55
No	1	3.45
Correct and consistent division of tasks		
Yes	39	44.83
No	48	55.17
Adequacy of the relationship between job and responsibility		
Yes	25	65.79
No	13	34.21
Acceptability of carrying out extra tasks		
Yes	26	60.47
No	17	39.53
Criteria related to the quality of the service		
<i>Environment</i>	45	51.14
<i>Empathy</i>	35	39.77
<i>Efficiency</i>	13	14.77
<i>Achieving goals</i>	30	34.09
<i>Effectiveness</i>	24	27.27
Company characteristics		
<i>Knowledge of activities</i>	39	61.90
<i>Objectivity and fairness</i>	17	26.98
<i>Competence</i>	16	25.40
<i>Experience under the subject of the evaluation</i>	9	14.29
<i>Third company</i>	6	9.52
Need for synergy between the components to ensure quality		
Yes	73	92.41
<i>No, there is a pre-eminent activity</i>	6	7.59
Presence of synergy in your company		
Yes	12	27.91
No	31	72.09

Table 5.
Evaluation of clinical risk and elements of risk management
Source: our production

ning courses to improve quality and transparency thanks to the provision of adequate tools to understand the information.

Characteristics of the institution: the institution and the professional figures involved in evaluation should, according to the responders, first know the activities being assessed (60%), be objective and impartial (about 27%) and competent (25.4%). The third party of the institution appears to be less important than the assessment to be carried out (9.52%).

Most people (92.41%) believe that there is no pre-eminent activity compared to others, in carrying out the activity of a health facility that provides quality services, however, only 27.91% of respondents think that this synergy is present in the company to which it belongs.

In mapping the questions and conditions to be submitted to the selected sample (table 6), the researchers decided to move towards a significant direction: the univariate analysis of the variables that influence the perception of a high frequency of adverse events within the company to which they belong.

The univariate analysis evaluates individually the correlation between each of the variables inserted in the first column on the left and the perception of a high frequency of adverse events in the company. The variable "perception of the high frequency of adverse events" has been chosen because it is the one that, for sample size and distribution, is more likely to give results.

No variable was significant for univariate analysis. The study would underline it, remembering the low sample size, but it would use some interesting data to make hypotheses. In this, it reported in the table the percentages of the row as less influenced by the number of the various categories.

Role: a high frequency perception of adverse events has been reported more by complex structure directors (perhaps because they have greater responsibilities) and by professional

	High frequency adverse events Yes N(%)	No N(%)	p
Role			0.103
<i>Doctor</i>	6 (22.22)	21 (77.78)	
<i>Complex structure Manager</i>	5 (45.45)	6 (54.55)	
<i>Administrative</i>	5 (21.74)	18 (78.26)	
<i>Professional</i>	10 (50.00)	10 (50.00)	
Years of experience			0.350
< 5 years	2 (14.29)	12 (85.71)	
5-9 Years	1 (33.33)	2 (66.67)	
10-19 Years	7 (29.17)	17 (70.83)	
≥20 Years	16 (40.00)	24 (60.00)	
ASL Membership			0.157
<i>Alessandria</i>	7 (26.92)	19 (73.08)	
<i>Verbania-Cusio-Ossola</i>	13 (29.55)	31 (70.45)	
<i>Vercelli</i>	4 (66.67)	2 (33.33)	
<i>Others</i>	0 (0.00)	3 (100.00)	
Correct and coherent division of tasks			0.075
Yes	10 (23.26)	33 (76.74)	
No	14 (42.42)	19 (57.58)	
Adequacy of the relationship between duties and responsibilities			0.481
Yes	4 (30.77)	9 (69.23)	
No	4 (20.00)	16 (80.00)	
Acceptability of extra tasks			0.344
Yes	6 (40.00)	9 (60.00)	
No	5 (25.00)	15 (75.00)	
Need for synergy to ensure the quality			0.482
Yes	20 (30.30)	46 (69.70)	
No	1 (16.67)	5 (83.33)	
Presence of Synergy in his company			0.063
Yes	17 (56.67)	13 (43.33)	
No	3 (25.00)	9 (75.00)	

Table 6. Univariate analysis of the variables influencing the perception of a high frequency of adverse events within the company to which they belong

Source: our production

staff (perhaps because they are subjected to greater workload and work stress).

Years of experience: the perception of a high frequency of adverse events is evenly distributed, with a slightly higher prevalence in those with a greater number of years of experience (> 20 years: 40%).

Local health authorities: the professionals of Vercelli who responded are few but seem more likely to perceive a high frequency of adverse events compared to what happens in other ASL.

Strangely, those who believe that within their own company there is synergy between the various components that contribute to quality is more likely to perceive as high the frequency of adverse events within the same company (56.67%).

	Odds Ratio adjusted	p
Role		
<i>Doctor</i>	1 (Rif)	-
<i>Complex structure Manager</i>	6.74	0.052
<i>Administrative</i>	0.83	0.814
<i>Professional</i>	3.23	0.157
Years of experience		
< 5 years	1 (Rif)	-
5-9 years	2.19	0.634
10-19 years	2.63	0.336
≥20 years	4.68	0.146
Gender		
<i>Male</i>	1 (Rif)	-
<i>Female</i>	0.58	0.407
ASL Membership		
<i>Alessandria</i>	1 (Rif)	-
<i>Verbania-Cusio-Ossola</i>	1.37	0.607
<i>Vercelli</i>	8.87	0.049
<i>Others</i>	-	-

Source:
our production

Table 7. Multivariate analysis: potential predictors of the perception of a high frequency of adverse events within the company to which they belong

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In conclusion, the study subjected the sample to multivariate analysis (table 7) in which potential predictors of the perception of a high frequency of adverse events within the company to which they belong are evaluated. The results are very interesting as the multivariate analysis evaluates the association between the variables of the left column (role, gender, years of experience and ASL) and the probability of perceiving the frequency of adverse events as high. Concerning the univariate analysis seen above, what changes? In this case, each variable is not evaluated individually but inserted into a logistic regression model that corrects the results due to the possible influence of the other variables contained in the model.

It emerges that:

1) the Directors of S.C. have a probability of perceiving as high the frequency of adverse events within the Company which is 6.74 times that of physicians (reference category). This data is adjusted for the possible influence that the other variables present in the model could have (years of experience, gender, ASL) and is a data at the limits of statistical significance ($p = 0.052$);

2) Vercelli professionals have a probability of perceiving as high the frequency of adverse events within the Company which is 8.87 times that of the Alexandrians (reference category). This data is adjusted for the possible influence that the other variables present in the model could have (years of experience, gender, role) and is a statistically significant data ($p = 0.049$).

4.3. Analysis of results

The next step, for this study (purpose: to demonstrate the validity of the theoretical model, testing it on a larger sample), is to analyze the questions from a qualitative-descriptive point of view, keeping in mind what emerged from the statistical results. To examine the individual open questions the research, need to start from the characteristics identified by the theoretical model, essential in the control process to guarantee the quality in healthcare, to confirm, implement or modify them. As seen, each application submitted investigates one or more of the nine characteristics of the control. In table 8 it is possible to view the results of the answers.

Question	Aspects	Answer
1A	Periodicity and Cyclicality	Adverse elements: therapeutic errors and drug delivery; diagnostic difficulties; infections; events included in taxonomy CTAE and ADR (Common Terminology Adverse Events and Adverse Drug Reaction); operating seat suspension. Other adverse organizational and procedural events concern: delays in providing the service; lack of communication between the various departments; events of aggression by users at the expense of the providers.
2a	Relevance and Thoroughness	Not countless requirements are listed, but the study can identify some main ones such as: centrality of the patient/user; evaluation of available resources (be they human, instrumental, financial); analysis of the context in which it operates (useful for identifying risk areas); adherence to the guidelines.
3a	Accountability and Task separation	A small majority of respondents declare that, within the health structure at which it serves, the division of activities is correct but, from a more in-depth qualitative examination of the answers, it emerges that despite their affirmation, sometimes (with a far more casual character) compared to those who say otherwise) are placed in situations to perform tasks not strictly competent, therefore, effectively the separation of tasks is not so clear.
4a	Competence	Professionals in the healthcare sector have favoured attributes falling within the "Environment" category, such as: professionalism; training; flexibility; accessibility; appreciably; etc. In the second place in terms of frequency, the sample listed attributes related to the sphere of "Empathy", such as: humanity; I listen; courtesy; respect; communication; involvement; etc. Important, even if reported with a slightly lower frequency, are the attributes of "Goal achievement" and "Effectiveness".
5a	Independence	The knowledge of the activity has been the most reported but, within it, the study could also include experience in the area covered by the assessment and emerge the characteristics of objectivity and impartiality.
6°	Structure	The perception is that there must be synergy between the various components and activities of the organization to increase the level of quality. Not surprisingly, in response to the question of how to cope with the occurrence of adverse events respondents among the various responses report the need for coordination between the various tasks.

Table 8. Mapping of answer

Source: our production

The first question in the questionnaire focuses on the aspects of the "Periodicity and Cyclicality" of the control activity.

The largest number of respondents answered this question and, as illustrated in Table 7, 67.90% declared that errors/damage/inconvenience in their structure were not frequent. As seen, the answers concerning the existence of reporting systems and procedures are small compared to the first question, however, among those who provided a response, the majority affirms its presence (94.29% for the reporting systems and 96.55% for the procedures) identifying them in some cases with the name "System/Service Clinical Risk".

The absence of adverse events should not mislead events are not perceived as frequent not because there are not, but rather, because employees are not adequately sensitized to their recognition and they are not aware of the related identification and reporting tools, even if they exist. This makes us understand that precisely the periodicity and cyclical of the control are essential to identify errors and/or damage in the process of delivery of the health good.

The requirements of "Relevance and Thoroughness" are monitored, therefore, those activities that have above all an impact on customer satisfaction and is also what is expected given the nature of the service, not neglecting, however, the professional quality (in this regard the mention to the lines guide) and organizational quality. These two attributes are found in the questionnaire reality and represent useful elements for maintaining and increasing quality.

As far as "Accountability and Task separation" of the activity

is concerned, thanks to the univariate analysis the study have noticed (remembering that the data provided by it did not produce results with statistical significance, but that allowed us to make interesting reflections) which do not declare the division of duties to be correct to show a greater perception of frequency of adverse events.

Given what emerged, it is believed that these requirements would be needed to clearly define the tasks, so that everyone operates according to their skills and, at the same time, the control is structured and allows to identify areas where the quality of service is lacking.

Therefore, once again, thanks to the examination of the local reality, the two attributes are confirmed.

Question 4A investigates the requirement of "Competence", being competent, but in this context, it is not only carried out with technical skills but also with the possession of interpersonal skills and comprehension skills.

The attributes of "Efficiency" are the least reported. The explanation may lie in the fact that, perhaps, these elements are perceived as important by those who have organizational-managerial roles within the structure or managerial roles. But given that competence must be a concept that encompasses more and different perspectives, solutions should be put in place to make all the figures working in health care more efficient, especially in a context of progressive containment of sector spending.

Nevertheless, the results allow us to say that Professional competence is a multidimensional concept like quality, and

thanks to its multidimensionality it is a valid instrument to guarantee quality in health care. Finally, examining the local reality, nine characteristics have emerged further compared to the 181 reported by the literature, they are: sharing; information; updated data; simplification; meritocracy; organization; planning; specialization; resources.

The aspect of "Independence" emerges through question 5A. The professional figures involved in the evaluation process must be autonomous in the process. Given that the research could consider these three requirements, as basic requirements of the evaluation activity, since only those who are aware of the dynamics investigated can make consistent and conscious assessments, the characteristics of objectivity, impartiality and third entity are the least obvious. These three characteristics are the expression of a requirement that the model has listed under the name of "Independence".

Only effective communication between departments and organizational levels can make it possible not to fall into this mechanism (Cilliers & Greyvenstein, 2012; Drummond & Jönsson, 2003; Garrison & Towsle, 2003), operating instead according to interaction and communion of interests, with the consequence that the service operates guaranteeing high levels of quality (Fenwick, Seville, & Brunsdon, 2009; Pieter van Donk, Drupsteen, & van der Vaart, 2013; Vatanpour, Khorramnia, & Forutan, 2013).

4.4. Effects on a theoretical model and verification tool

Thanks to the administration of the questionnaire to the employees of the Piedmont ASL the theoretical model was tested on a larger sample. The analysis of the results presented shows that the nine characteristics are present during the audit and are verified in the health structures examined. At the same time in the multidimensional quality view, the results obtained show that the characteristics identified by the model embrace all the qualitative aspects highlighted in the literature, for example, periodicity and cyclicity allow constant monitoring of the entire work, the protection protects both users that the providers, the competence makes a valid contribution to the professional and managerial quality, the structure allows the improvement of the organizational quality. These features present at the audit stage allow the achievement of quality requirements and at the same time their improvement. It can be said that the control activity is a valid instrument to guarantee total quality in the health sector. The theoretical model is valid and confirmed.

5. Conclusion

This document aims to provide a case study on quality care. More specifically, the study wants to confirm the following hypotheses.

HP1, compared to the study of Mosadeghrad (2012) there is a variation in the number of characteristics in the case study, from 181 to 166 in our case, with a variation of some characteristics detected. The study also allows the grouping of the characteristics according to the five groupings: Environment, Empathy, Efficiency, Achievement of objectives, Effectiveness. This allows us to state that the reference context plays an important role in defining the characteristics and the concept of quality defined by each profession based on the reference state.

HP2 confirms the approach the characteristics described by (Biancone et al., 2017) defined in the "P.R.A.C.T.T.I.C.S." approach.

The study has seen how the tool of control is useful and necessary in carrying out this evaluation, allowing, through a continuous process, the investigation of the most relevant variables, identifying the critical areas and the related corrective actions. Through its evaluation and correction action, the audit distinguishes itself from other processes for its function of quality

assurance in health care, representing, at the same time, an instrument of integration between the various activities that populate the health sector. In the context of the process of corporatization of the health sector, the audit is therefore the means by which to satisfy the primary purpose of the system, the provision of health, linking it, however, to compliance with economic constraints and financial balances, and to the stimulus towards process innovations and towards collaboration and sharing among the various lenders.

"Good control" must present a series of observable characteristics in such a way as to examine that the quality of the service is guaranteed. These characteristics have composed the theoretical model, which has been tested in the Piedmontese sample, allowing to demonstrate through its verification tool (given to the same reality) its validity and allowing to confirm its characteristics. Therefore, when the controller operates according to the nine characteristics indicated, this should be able to guarantee and improve the various dimensions of quality in health care.

Possible lines of future development foresee the administration of the verification tool beyond the regional boundaries, in order to adapt the model nationally and subsequently internationally, making the necessary corrections if necessary or confirming what has emerged at the local level. Moreover, given that the analysis carried out highlights some characteristics and some elements that must be considered during the audit, the prospects envisage that the methodological approach must be tested to verify the effective positive fallout on the risk management and control system. The venture analysis could focus on the quantitative analysis of the results in the light of integration and verification of the elements highlighted in the treatment and on the continuous improvement of the healthcare companies.

The study must be confirmed in further contexts and different health systems. The present study provides a useful approach that can be confirmed through multidisciplinary audits to verify, through a system of continuous improvement, the effective increase in quality in healthcare.

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