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RESEARCH ARTICLE

Determinants of Quality of Care: Towards an Approach Inspired by the Principles of Industrial Quality

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ABSTRACT

In today's healthcare systems, quality of care has become a crucial challenge, as it is influenced by complex and constantly changing factors. As demand increases and requirements become more complex, it has become essential to ensure quality of care in order to meet societal expectations... This article analyzes the determinants of quality and examines the link between healthcare quality and the principles of industrial quality management.

INTRODUCTION

People have always attached great importance to quality. The concept of quality and its evolution in the industrial world were strongly linked to the Second World War in Japan, then spread throughout the world's industry, to finally affect all sectors, including the health sector. Quality management has evolved considerably with the globalization of the highly competitive economy, making it a necessity and a priority for companies, and is now gaining ground in the world of healthcare.

Controlling the quality of care provided by healthcare systems is becoming a key factor in meeting society's expectations. These systems are subject to ever-increasing and increasingly complex demands (old age, technological and organizational innovations, development of outpatient care). Against this backdrop, the French National Authority for Health (HAS) has launched a study into the transversal determinants of quality of care in healthcare establishments, with the aim of helping all players to implement improvement initiatives in this field.

The aim of this article is to define the evolution of quality of care, to present its determinants, and finally to specify its link with the methods and principles of industrial quality. .

1. Evolution of quality of care.

Definitions:

The word “quality” refers to the Latin word “Quais”, which means “what”. For Robert, quality “is a way of being, a characteristic” and is intrinsic to a product or service. For A. F. N. O. R., quality is

defined as "all the properties and characteristics of a product or service that give it the ability to satisfy explicit or implicit needs". (ISO 84002 standard).

Among the divergent interpretations of quality, a consensus has been reached concerning its definition by the International Organization for Standardization (norme ISO 802 -2.1)

"All the characteristics of an entity that give it the ability to satisfy expressed and implicit needs.

Before looking at the history of quality of care, we need to clarify its definition. Various approaches have been formulated on this subject, some of which we will mention below:

"High-quality care is care aimed at maximizing the well-being of patients after taking into account the benefit/risk ratio at every stage of the care process". Avedis Donabedian, 1980

The evaluation of the quality of care is a process which must make it possible to guarantee to each patient the assortment of diagnostic and therapeutic acts ensuring him the best result in terms of health, in accordance with the current state of medical science, at the best cost for the same result, at the least iatrogenic risk, for his greatest satisfaction in terms of procedures, results, human contacts within the system of care". World Health Organization, 1982

"High-quality care contributes strongly to increasing or maintaining quality of life and/or length of life." American Medical Association, 1984

"The ability of health services for individuals and populations to increase the likelihood of achieving desired health outcomes, consistent with current professional knowledge." Institute of Medicine, 1990

History of quality care

Quality as a symbol of professional bureaucracy :

H. In his book "Structure and Dynamics of Organizations", Mintzberg describes the hospital organization as a professional bureaucracy. In order to function properly, this structural model relies on the skills of the operational center (professionals), whose role is to control care actions.

Professional work is coordinated through the prior establishment of standards defining what needs to be done.

In this approach, quality is defined by the mastery of professional practices and compliance with general rules, which may be legal rules or internal rules determined by the organization's management.

This phase was marked by two stages:

The first stage: Hospital quality assessment

In the 1980s, a number of studies were carried out in the United States and Europe, with two different orientations: the evaluation of the quality of professional practices and the evaluation of the quality of care delivered within the hospital establishment.

Quality of professional practice

In this approach, quality is linked to the professional expertise and know-how of each player in the care process, and is therefore defined as the mastery of all diagnostic and therapeutic procedures.

The quality of hospital services

The evaluation of hospital services is part of the bureaucracy's vision of quality, and is linked to compliance with general rules, be they organizational or legal. Avedis Donabedian has identified three levels of care quality assessment:

- Structures: human and material resources

- Care procedures

- Outcomes: changes in health status during the course of care, and patient satisfaction with care.

The common denominator of these three levels of assessment is the definition of references for each of them, which means defining "explicit quality standards" and then assigning them a quantitative value.

This approach to quality is based on two main characteristics:

Standardization: quality is assessed according to the principles of conformity to norms and standards.

Increase in measurable action points.

The second stage: quality assurance

The quality assurance movement emerged in the 1980s, with the aim not only of assessing quality, but also of taking corrective action through a system of action to undesirable events detected in the assessment phase. This approach was characterized by two necessary principles: -monitoring systems -workflows according to set norms and standards. Quality and the emergence of a reflection on work organization. This new trend emerged in the USA in the 1980s, and in Europe after a few years, as a challenge to traditional approaches to quality assessment and assurance.

Total quality management

After a reappraisal of quality assessment and quality assurance approaches, the quality management movement emerged, with hospital organization moving from defect detection to a principle-based quality management system:

-The search for continuous improvement in work.

-Quality is no longer defined as compliance with standards, but as the adequacy of hospital services to patients' needs.

Accreditation of healthcare establishments

Accreditation is a process designed to assess hospital quality and promote continuous improvement. It is a procedure for obtaining a general and independent assessment of quality.

2. Determinants of quality of care

Definition of the concept of determinants of quality and safety of care

The cross-cutting determinants of quality of care (referred to simply as "determinants" in the remainder of this article) have been defined as elements applicable to any care activity which, according to the scientific literature and expert consensus, contribute significantly to the quality of care. Quality of care is defined as the degree to which the health care provided to the population achieves the expected outcome and is in line with current scientific evidence. Transversal determinants apply to all care activities, while specific determinants apply to a particular care activity.

The literature search was based on a non-systematic literature review. It was limited to English- and French-language publications and covered the period from 1988 to 2021. The literature review was based on the bibliographic watch carried out by the HAS documentation and watch department, and on searches for the terms "quality AND care" in the Medline database. The search was completed by queries focusing on specific issues (for example, the relationship between volume of activity and results, or teamwork). The articles identified were then analyzed in search of relevant documents. A search was also carried out on the websites of various national and international organizations (health agencies, learned societies, ministries of health, etc.) to identify reports that might not have been found during the search of automated bibliographic databases. A bibliographic watch was maintained on the subject until June 2022.

RESULTS

The determinants of quality and safety of care that emerged from the literature review were classified into four families: material resources, human resources, organization of care teams and cooperation between care teams.

Material resources

Architecture and facility design

Recent attention in the literature has focused on the importance of the design of hospital structures for the quality of care, and on the value of designing the patient pathway before the building itself. The contribution to quality is linked to several mechanisms, including the reduction of medical and medication errors (identical and individual rooms, strong lighting), the reduction of infections (individual rooms) and the reduction of patient falls.

Technical facilities and equipment

The link between technical facilities and quality of care is well established. For example, one study showed that the in-hospital mortality and one-year mortality of polytrauma patients hospitalized in trauma centers with a 24-hour technical platform for orthopedic or neurosurgical surgery, and with interventional radiology and an intensive care unit, were respectively 20% and 25% lower than those of patients hospitalized in healthcare establishments with no 24-hour technical platform, and only agreements with better-equipped centers to facilitate transfers.

Information systems

Information technologies also play an essential role for the quality of care. These include access to relevant information, improving communication, making knowledge accessible, assisting in decision-making, monitoring and verifying in real time. It is essential to ensure computer compatibility between information systems and the structuring of information whenever possible, in particular to ensure the transmission and sharing of clinical data on the health territory. This remains a priority for the quality of care, but also for informing the patient about his clinical situation and his management, and for evaluating the quality of care. In health, the approach must also ensure that the risks and security problems posed by information technologies are understood.

Human resources

Competence of professionals

The health system revolves around a complex human organization and the competence of health professionals is decisive for the quality of care. The HAS has published a review of the literature on the subject. The competence of a professional is defined as a "know-how to act" in a situation. It is based on knowledge, know-how and a way of being. It includes specific technical skills of the profession (scientific knowledge, surgical know-how) and soft skills (ability to work in a team, communication). The Anglo-Saxons frequently use the term professionalism to talk about the integration of all skills that go beyond technical knowledge, the importance of which is documented. Initial and continuing education and continuous professional development of skills are identified as determinants of quality and care. They are part of the recommendations of various learned societies and national organizations. Several foreign countries (United Kingdom, United States, Canada) have set up external mechanisms to assess the maintenance of the competence of professionals over time and guarantee the competence of doctors and nurses. At the same time, some Anglo-Saxon countries, in particular the United States and Australia, have long established internal mechanisms in healthcare institutions to ensure the competence of the professionals who practice there.

Number of staff and workload

The link between staff ratios and the quality of care is supported by the literature. For these reasons, staff ratios are identified as quality criteria and are part of the national standards of several countries. Beyond the standards and funded positions, the actual workload is increased when positions are not

filled, either punctually (absenteeism) or more structurally (vacancies). The problems of stability of skills over time, in particular medical ones, are sources of risks, for example during periods of leave, renewal of teams, change of interns and recourse to temporary employment.

Permanence of skills and stability of teams

Studies have shown that the mortality of patients admitted to the hospital on Saturdays and Sundays was higher than that of patients admitted on working days: this phenomenon is called the "weekend effect" and is particularly marked in case of admission to the emergency room or intensive care, and for pathologies with high mortality in the acute phase and requiring urgent specialized care. The quality of the continuity of care is promoted by the longitudinal management by the same doctor or the same team, or by a rigorous transmission of information. Longitudinal management and knowledge of procedures are weakened by the use of temporary workers [14]. For the permanence of care, the level of experience of the doctors available on the site is found in the literature as a determinant of quality and safety.

Volumes of activity

The question of the link between the volume of activity, especially in surgery, and quality has been studied for a long time. Two successive reports by the Institute for Research and Documentation in Health Economics (Irdes) and recent literature show a link between the volume of activity of the establishment and quality, in particular for heavy and complex surgery . However, the nature and meaning of causality are debated: probable learning effects – at the individual level (surgeon), but also at the hospital level (knowledge transfer, organizational mode) – seem to explain much of this correlation, but "selective referrals" (referral to centers with a better reputation) are also a possible mechanism to explain the observed link. For most interventions, there is no unanimously accepted activity threshold and the volume / quality relationship becomes marginal beyond a threshold that can be relatively low, and even reverse from certain volumes leading to possible perverse effects on the quality of care of too high a concentration of activity. A recent review concludes that the volume per surgeon and the volume per health facility have an effect on performance independently of each other. However, a recent French study did not show a link for ten digestive, cardiovascular or orthopedic interventions [24]. In obstetrics, several studies on the relationship between volume and performance have highlighted a U-shaped relationship: centers with a very low or a very large number of births have more complications. The reasons given for the poorer results observed in high-volume centers are a greater variability of practices, in particular in connection with the exercise of doctors in training, a technical platform and insufficient means for the activity, but also a possible failure to take into account the prognostic characteristics of the parturients who are cared for there [25]. The volume/performance association has also been demonstrated for medical care [26] and in intensive care. The existence of a link between volume and quality has led the United Kingdom and the United States to make public the volume of activity and the annual complications of each surgeon for the riskiest interventions [28,29]. This publication appears useful to encourage approaches to improve practices and to inform the choice of patients despite the complexity of the data and their analysis (adjustment, small numbers, link between the performance of the team and that of the surgeon). However, the publicity of the results of care is the subject of reservations and debates, in particular because it could encourage some surgeons not to take care of patients at high surgical risk or to carry out interventions not indicated to reach the recommended threshold [31]. It is important to discuss the question of the relevance of the interventions carried out within the framework of a regulatory system requiring an authorization criterion based on the volume of activity carried out.

Organization of care teams

The control of quality is based on an organized collective approach and the development of a favorable culture. A majority of adverse events have as contributing factors organizational, verification, coordination or communication defects related to a lack of common safety culture and teamwork.

Governance and cultural factors

The performance and reliability of the human organizations that are the care services are based on a culture of quality, safety, teamwork, but also the quality of life at work, and on ethics, the sense of service, the sense of care, infused by governance and shared by all team members. This set constitutes the culture favorable to the quality and safety of care.

Governance and ability to lead teams

The management at the level of the establishment and the style of organization and animation of the teams are considered as determinants of the quality of care, but also of the quality of life at work and therefore of the stability of the staff [34]. The emphasis is placed on the importance of the training of managers, medical and non-medical, and on the reinvestment of the level of the care service and the function of head of service. Given the importance of the governance of healthcare teams, great attention must be paid to the selection, governance training, evaluation and valorization of team leaders [35]. Beyond theoretical organizations and guidelines, what is decisive for the quality and safety of care is the ability of women and men who occupy positions of responsibility to lead organizations, and in particular care teams (leadership).

Reliability of human organizations

The management, both preventive and curative, of "citizen-patients" is more and more often the result of a collaboration between several health professionals. For each treatment, the course involves one or more teams within which different professionals, different structures, different sectors cooperate. These complex human organizations contributing to care are sources of risks, erroneous decisions. The rules of reliability and the culture of vigilance of human organizations deduced from the experiences acquired in fields with high technological risk (nuclear industry, aviation ...) apply to the field of health.

Methods for implementing good care practices

The methods for implementing good care practices include "safety solutions" such as checklists and bundles of recommendations. The literature shows the effect of these solutions, for example on the prevention of pneumonia acquired under mechanical ventilation [38] and on improving patient safety in the operating theatre [39]. All the experiences insist on the fact that the list or the bouquet are not in themselves sufficient to ensure success but that the result depends on many other factors related to governance [40]: the commitment of the managers, a fair balance between standardization and flexibility, the importance given to the feedback of frontline professionals, the sharing of information between the different care units, the monitoring of results and the more general development of a safety culture [41]. Teamwork Taking into account the lessons learned from areas at risk, the role of teamwork on the quality of care has been recognized since the early 2000s [42]. The importance of teamwork is explained by several factors. First of all, because medicine is becoming more and more complex and requires the association of different skills, especially as pathologies become chronic and patients often carry comorbidities, requiring multidisciplinary approaches. Secondly, because the improvement of teamwork has demonstrated its effectiveness in improving patient safety and reducing complications [43]. Data from the sentinel event programs of the accreditation of American institutions indicate that team functioning problems are at the origin of the majority of serious adverse events [44]. In addition, it appears that effective teamwork improves well-being at work and reduces the risk of burnout. Implementation of good practices Since the 1990s, evidence based medicine has prioritized scientific production, which has made it possible to propose good practice recommendations [46] which aim to inform health professionals and users of the health system about the state of the art and the data acquired from science, in order to improve the management and the quality of care, and to limit the variability of practices [47] and undue expenses [48]. Security practices have thus emerged and have been promoted [49]. The demonstrated and recommended good practices must be applied. The barriers to be crossed between the concept and the practice are numerous [32]. Studies conducted on the subject have shown that the rate of compliance with good professional practices was of the order of 50%. Success depends on

the implementation strategy (implementation) and the involvement of governance in the process, not only at the initial stage, but also over time through the evaluation of results and feedback from professionals

Relevance of care The relevance of care is a major health issue and contributes to the resilience of our health system in the face of demographic, epidemiological and environmental constraints. The relevant care is the right care (acts, prescriptions, services), to the right patient, at the right time, taking into account current scientific knowledge. It is estimated that about 20% of total health expenditures would be wasted [52]. In order to improve the relevance of care, it is necessary to act on three axes: overuse, underuse, more frequent, and operational waste [53]. Patient-centered approach and user engagement The notion of a patient-centered approach is considered an essential element for the evolution of the health system and health organizations [54]. The literature describes the positive effects of a "person-centered approach". The patient-centered approach adapts the implementation of good practices to each patient. The accessibility of care on the territory must be organized taking into account the patients (intellectual, motor or sensory disability, means of transport, isolation) and local conditions (geography, meteorology). It is necessary to systematically screen for possible psycho-socio-environmental vulnerability in order to adapt the care project and patient support, as has just been recommended by the High Council of Public Health for the outpatient shift.

Evaluation and improvement approaches

The first step of the improvement approach is to measure and therefore collect indicators of structure, procedure or results, then compare them with references and finally consider how to improve the care process [58]. The literature indicates that the measurement of clinical results and the feedback to institutions, services and professionals on their performance lead to an improvement in results [59]. The indicators of quality of care can be derived from patient files, medical-administrative databases whose medicalization and the links between them are desirable [60], specialty registers without ignoring their difficulties [61], questionnaires addressed to institutions or patients and, in the future, real-life data from data warehouses [62]. There are three types of measures that evaluate the quality of care perceived by patients with separate tools: patient-reported outcome measures (PROMs) for the outcome of care, patient-reported experience measures (PREMs) for the experience of care and patient satisfaction questionnaires for the response to their expectations. Experiments have demonstrated the benefits of these measures of the quality of care perceived by patients. Satisfaction is influenced by the patient's expectations and preferences ; it reflects the degree of agreement between expectations regarding care and the perception of the quality of care provided [64]. Satisfaction, experience and results of care are different concepts; their measures each have advantages and limitations and appear complementary [65]. Numerous evaluation and improvement mechanisms strengthen the quality and safety of the work of healthcare teams. Fundamental mechanisms are at the base of the approach to improving the quality of care and the culture of care safety: the evaluation of practices [66], the setting of standards and the evaluation of compliance with standards [67], the collection and analysis of adverse events [68], the accreditation or certification of sectors of activity, team evaluation and accreditation mechanisms [70], evaluation mechanisms and skills development [71]. The public dissemination of information on the quality of the care offer has been developing around the world since the late 1980s with the aim of both regulating and developing health democracy. Public dissemination can contribute to improving the quality of care through various mechanisms. It induces a greater demand from the public by promoting a better appropriation of the concept of "quality of care". It is effective with healthcare professionals, from the healthcare team to governance, by stimulating their participation in improving the quality of care (protecting or improving their reputation, improving competitiveness, etc.). If recent studies seem to support the beneficial effect of the public dissemination of the results in different fields [29], it is the subject of reservations and debates.

Risk management

Risk management is an essential step to improve the quality and safety of healthcare in health facilities. The certification of health institutions promotes the implementation of a global, transverse and coordinated risk management approach, based on a systemic risk approach and integrated into the governance project. Risk management is not only an immediate and corrective action related to an adverse event, a crisis situation or current events. Its goal is to organize in a collective, coherent and sustainable way the governance and the fight against adverse events according to an action program kept regularly updated according to the priorities and the specific risks of the establishment.

Quality of life at work

The quality of life at work of professionals is identified as an essential condition for the quality of care and the transformation of the health system required to improve patient safety [45]. An abundant literature links working conditions, job satisfaction and quality of care. Several elements influence the quality of life, among which: staffing adapted to the workload, the governance of the activity sector, the relations between non-medical caregivers and doctors and the commitment of professionals [73]. The quality of life at work is also one of the elements of attractiveness and loyalty of medical and non-medical staff, therefore the stability of teams, determining the quality of care .

Cooperation of healthcare teams

The improvement of practices, the measurement of results and the prevention of risks must concern the entire healthcare production chain, including economic and administrative practices, training and research.

Cooperation of the healthcare teams within the establishment

The management of a patient very often calls for the cooperation of several teams within an institution: recourse to the technical platform, cooperation of several departments about the same patient, transfer from one clinical department to another. The medical project and the healthcare project of the establishment must organize these cooperations.

Cooperation of healthcare teams, care pathways and gradation of the offer within the territory

The institution's care offer must be clearly defined and positioned in relation to the offer present on the territory and integrated into the care pathways. This should make it possible to articulate the care of the patient in the establishment with his care upstream and downstream. Coordination between stakeholders and structures is essential. The documents allowing the liaison between the different actors ensure the continuity of the care [75]. Interruptions in the management and transmission of information generate risk [76]. The medical synthesis component [77] and the emergency liaison file for the elderly make it possible to improve the transfer of useful information to the doctor intervening in an emergency. Likewise, the letter of liaison at the exit, delivered to the patient and addressed to the attending physician, makes it possible to make the exit more reliable by ensuring the continuity of care. It is also a question of ensuring complementarity between the establishments of the territory for the care of patients.

3. Hospital quality methods inspired by the industrial world

There are three main quality methods developed in the industry:

the final a posteriori control; the quality assurance and the total quality.

The final a posteriori control:

The mission of the final control is to measure the quality of the final product and its ability to satisfy external and internal customers. It is not currently used in the health sector, but some traditional approaches to the quality of care have been inspired by it.

Quality assurance:

The objective of quality is to satisfy the needs of the customer, so the company is committed to producing goods and services that are designed to meet the expectations of consumers. All the means of control and correction undertaken by the company are integrated into this same objective.

Quality assurance offers control procedures and preventive devices whose role is to ensure the quality of the product during all levels of production. The control is now only done at the end of the manufacturing chain. In the 1980s, the application of the principle of quality assurance to the hospital field appears in the United States, in the United Kingdom, then in the Netherlands, the audit process is based on the evaluation and observation of all care activities with reference to pre-established norms and standards. subsequently, the ISO 9001 standard is born in the industrial field and does not find difficulties in integrating into hospital environments, but it is quickly found later that this standard is not very appropriate for clinical practices, so a third approach is manifested which is accreditation.

Total quality

The bases of total quality have been highlighted by the quality assurance mentioned above which are:

*Quality control begins from the design of the product until delivery to the consumer.

*Quality control involves everyone involved in the manufacturing process. This approach is based on five fundamental principles:

•Focusing on the customer, one of the key principles of quality assurance.

•Based on the process approach with a preventive vision,

*Involve all functions in the quality approach.

•To set as a goal continuous improvement, taken from the concept of defects.

*Involve all the staff

This approach is applied in healthcare facilities at the unit level or in the field of specific quality, based mainly in this approach on the Deming wheel."PDCA-Plan Do Check Act" (Figure 1)

The Evaluation of the different models The tools of a posteriori control remain the least effective, in fact identifying the problem after it has occurred is not enough to ensure the quality of care, because they do not make it possible to anticipate failures and errors.

The methods of quality assurance are perceived in a contrasting way, the audits of health professionals are effective and contribute to the improvement of professional practices, and are easy to accept by healthcare actors, in particular doctors, while the effectiveness of the accreditation tool is always questioned, and is not easy to tolerate by doctors who demand professional autonomy, and claim that it is only a cumbersome administrative machine in application.

The tools related to total quality, mainly the PDCA have given good results in terms of improving the quality of care, that said their application is restricted to specific units or areas, The success of quality factors and methods in the hospital environment remains a subject that requires even more research in order to report clearer answers. in the United States, a study published in 2011, develops a

conceptual model; the MUSIQ model (Model for understanding success in quality) which identifies five categories of factors that contribute to the success of quality management, these categories are: the external environment, the organization itself, microsystems, healthcare teams and various factors such as significant events or the development of strategic plans. Further research is still being carried out in this direction, because the field of care is still waiting for more precise answers on the success factors of the quality of care.

CONCLUSION

The quality and safety of care are a legitimate expectation of users and contribute to the efficiency and resilience of our health system. Nevertheless, this is a difficult quest as evidenced by the efforts of all countries in this direction and the difficulty of disseminating the best organizations and practices in all sectors. Health professionals and managers of the various sectors of activity within institutions will find in this work the arguments and programs to improve the quality and safety of their care. Institutions and regional health agencies will be able to use it to regulate care activities. Finally, the legislator will be able to rely on these elements to ensure a restructuring of the care offer by quality and safety.

The three methods of quality improvement designed in the industrial field have all been adopted in the hospital environment, final control and quality assurance are one of the methods that have been accepted by health professionals but their effectiveness remains uncertain. The model of' total quality has proven its effectiveness but at a specific level (care units or specific quality), its effectiveness throughout the care system remains to be discussed.

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