

Behavioral Factors in the National Quality Indicators through Implementing Total Quality Management

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ABSTRACT

Background: For 3 years running, there has been a difficulty in reaching the target of National Quality Indicators on the behavior of hand hygiene and the use of personal protective equipment by doctors, young dentists, and nurses from July to September 2022. This study aimed to describe employee behavior in achieving National Quality Indicators through the implementation of Total Quality Management (TQM) at Unimus Teaching Hospital of Dental and Oral in Semarang, Indonesia.

Method: This cross-sectional study collected data from 75 employees of Unimus Teaching Hospital of Dental and Oral by accidental sampling technique. The instrument was developed by a structured questionnaire and analyzed using frequency distribution.

Result: 11 National Quality Indicators have reached the target except the indicators of behavior of doctors during visiting hours (69%). The implementation of the Quality of the 10 aspects has been well implemented to support it, with the most implemented being the factors of scientific approach (96%), customer focus (94.7%), team work (94.7%), and long-term commitment (94.7%). Additionally, it is necessary to improve the aspects of competence human resources, education and training, passion with quality, and continuous system improvement to ensure the achievement of National Quality Indicators. The implementation of TQM is good. In supporting the achievement of National Quality Indicators, the hospital emphasizes more on education and training efforts, and in the aspect of structure, increasing the number and competence of its employees.

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Article History

Received 16 December 2024

Revised 10 January 2025

Accepted 3 March 2025

Available Online 21 March 2025

Keywords

Employee behavior
Total Quality Management
National Quality Indicators
Hospital

DOI

10.14710/jpki.20.3.178-184

INTRODUCTION

At this time, the challenges of healthcare organizations are the high cost of services, rapid technological advancements, and the demand to produce quality services with reduced cost while satisfying patients' needs and complying with accreditation standards, which require hospitals to maintain high-quality services.(1),(2) Total Quality Management (TQM) is known as management-integrated quality improvement that can help the work processes that focus on customer satisfaction and improving organizational performance to achieve the goals.(3) Implementation of TQM needs to be supported by leadership commitment, employee attitudes and behavior, and comprehensively integrated with a system approach based on scientific methods in problem solving and decision-making. Through the implementation of TQM in a hospital organization, quality control in services will be maintained and help organizations drive better results in their financial and competitive positions.(4) Therefore, hospitals as complex organizations

must focus on improving innovation skills that adopt and implement improvement strategies such as the implementation of TQM.(2) TQM contains ten elements, which include customer focus, obsession with quality, scientific approach, long-term commitment, teamwork, continuous system improvement, education and training, controlled freedom, unity of purpose, as well as employee involvement and empowerment.(5) The TQM implementation is strengthened by the specific quality department, and various instruments have been developed to measure the healthcare service quality.(5)

Accreditation is a crucial process that measures the quality of a hospital, and it is required for all hospitals. Accreditation assesses healthcare organizations against set standards. (6) Hospital accreditation standards in Indonesia, based on the Regulation of the Minister of Health of the Republic of Indonesia No. 30 of 2022, require hospitals to achieve 12 National Quality Indicators comprising patient identification compliance, compliance

with the use of personal protective equipment, outpatient waiting time, delays in elective surgery, compliance with doctor visit hours, reporting time for critical laboratory test results, compliance with the use of the national formulary, hand hygiene compliance, compliance with clinical flow, compliance with efforts to prevent patient risk of falling, patient and family satisfaction, and speed of complaint response time.(7)

Unimus Teaching Hospital of Dental and Oral, which has been officially operational since December 12, 2019, is classified as a special hospital of dental and oral. For 3 years running, this hospital did not reach the target of national quality indicators, especially in aspects of the behavior of hand hygiene compliance and of using personal protective equipment by doctors, young dentists, and nurses, from July to September 2022. The preliminary study results also showed that patient satisfaction decreased from 96% in October 2022 to 94% in November 2022. A study showed that employee attitudes and behavior have a significant impact on patient and clinical outcomes, making them crucial for effective change management. Creating the right environment can significantly improve hospital performance, including patient satisfaction, clinical unit performance, and health outcomes. This can lead to improved financial results and a stronger competitive position.(8)

Improvement is an activity carried out for strategic purposes such as time reduction, cost reduction, and increased customer satisfaction. According to Donabedian (1968), health service quality assessment is carried out through 3 approaches, namely structural approach, process approach, and output approach.(9) Therefore, this study aimed to explore and discover the behavioral factors in the National Quality Indicators of health service quality through the implementation of TQM. The study focused on analyzing the employee behavior in the National Quality Indicators and implementation of TQM by considering 10 aspects as process variables and structure variables.

METHOD

This study used a cross-sectional method by collecting data from respondents and was conducted for 6 months from May to September 2023. This study has been approved by the Research Ethics Committee of Faculty of Public Health of Diponegoro University through letter number 168/EA/KEPK-FKM/2023. Data were collected from hospitals purposely chosen to represent the population of all employees and doctors, totaling 90 respondents. The sample in this study was calculated using Krejcie and Morgan and resulted in as many as 73 so it was rounded up to 75 respondents.

This study used 3 variables, namely: (1) Structural variables comprising the availability and competence of human resources, the availability of standards, policies, infrastructure, and work environment. (2) The process variables consisted of behavior and several activities that produce quality services by health workers. Measurement of process variables using the 10 components of the TQM approach included customer focus, obsession with quality, teamwork, scientific approach, long-term commitment, continuous system improvement, controlled freedom education and training, unity of purpose, as well as involvement and empowerment of human resources. (3) The output variables comprised the final results of health worker services to patients; it could be in the form of patient satisfaction or conformity with quality standard indicators. The output variables included indicator of the behavior of employee to achieve 12 National Quality Indicators of hospital, namely hand hygiene compliance, compliance with the use of personal protective equipment, patient identification compliance, outpatient waiting time, delays in elective surgery, compliance with doctor's visit time, reporting of critical laboratory results, compliance with the use of the national formulary, compliance with clinical flow, compliance with efforts to prevent patient falls, speed of complaint response time, and patient satisfaction.(6)

The questionnaire in this study was divided into three parts. The first part revolved around the characteristics of respondents. The second part contained the structure variables that had five questions with four answer choices and scores as follows, "Strongly Disagree = 1", "Disagree = 2", "Agree = 3", and "Strongly Agree = 4". The total score of structure was categorized based on the median value which was 15. If the total score was more than or equal to 15 then it was interpreted as belonging to the "Good" category, if it was less than 15 then it was considered to belong in the "Less Than Good" category. The third part comprised the process variables that had the 10 components of TQM which included 23 questions with four answer choices and scores as follows, "Strongly Disagree = 1", "Disagree = 2", "Agree = 3", and "Strongly Agree = 4". The total score of process variables is categorized based on the median value. If the total score was more than or equal to the median score then it was interpreted as belonging to the "Good" category, if it was less than the median score then it was considered to belong in the "Less Than Good" category. The output variable in the form of achievement of 12 national quality indicators was obtained through secondary data. It shows the target and achievement of 12 national quality indicators by the hospital during the study period.

The questionnaire was given to 30 respondents who were employees of other hospitals, and the validity of the questionnaire was checked using Pearson Correlation Product Moment. Thirty-two questions were above the r -tables = 0,361, meaning they are valid. The reliability of this questionnaire was checked using the Cronbach Alpha test, and the result was an Alpha value of $> 0,06$, which means that it is reliable. Data processing and analysis were carried out descriptively using frequency distribution tables to obtain an overview of the achievement of the hospital's National Quality Indicators by variables of structure and process of 10 components of TQM.

RESULT AND DISCUSSION

In this study, the majority of respondents were female (65.3%), mostly young adults (17-25 years old) (56%), with a bachelor's degree (70.7%), had a working period of <3 years (81.3%), and had a position as an employee (49.3%) (Table 1).

The results in Table 2 indicate optimal achievement in several indicators that show behavioral factors in patient identification compliance, compliance with the use of personal protective equipment, and compliance with efforts to prevent patient falls. Some indicators that have reached the target but need to be improved are the behavior of hand hygiene and the doctor's visiting hours. A qualitative study in Intensive Care Units (ICUs) in several major hospitals in Riyadh, Saudi Arabia revealed several factors that impact hand hygiene compliance, including individual, work/environment, team, task, patient, organizational, and management concerns. The results of this study suggest an increase in understanding of hand hygiene practices and the creation of strategies and assessment methods of handwashing compliance.(10)

The structural variables in achieving national quality indicators implemented the most were the availability of hospital policies, availability of standards and operational procedures, as well as a safe and comfortable working environment (89.3%). (Table 3) It is reasonable that in providing services to patients, there is a hospital policy that guides all components of the hospital to achieve quality. When a hospital has a firm quality policy, the quality objectives or service standards can be considered stable and relatively high, which has an impact on service quality performance.(11)

Table 1. General characteristics of respondents

Characteristics	f	%
Gender		
Male	26	34.7
Female	49	65.3
Age category		
17-25 years old	42	56.0
26-35 years old	33	44.0
Education Level		
Senior High School	3	4.0
Academy/Diploma	13	17.3
Bachelor	53	70.7
Post Graduate	1	1.3
Dentist Profession	5	6.7
Position		
Dentist	5	6.6
Young dentist	28	37.3
Officer	37	49.3
Nurse	5	6.6
Job Tenure		
< 3 years	61	81.3
>3 years	14	18.7

Table 2. The achievements of National Quality Indicators

National Indicator of Quality	Target	Achievements	Description
Patient identification compliance	100%	100%	Achieved
PPE Use Compliance	100%	100%	Achieved
Outpatient waiting time	$\geq 80\%$	100%	Achieved
Postponement of elective surgery	$\leq 5\%$	0.1%	Achieved
Compliance with the doctor's visiting hours	$\geq 80\%$	69%	Not yet achieved
Time to report critical laboratory test results	100%	100%	Achieved
Compliance with the use of the national formulary	$\geq 80\%$	100%	Achieved
Hand hygiene compliance	$\geq 85\%$	91%	Achieved
Adherence to clinical flow	$\geq 80\%$	100%	Achieved
Adherence to fall prevention efforts	100%	100%	Achieved
Patient and family satisfaction	$\geq 76.61\%$	96%	Achieved
Speed of complaint response time	$\geq 80\%$	100%	Achieved

Table 3. Employee perception of structure variables

Structure Variables	Good		Less Than Good	
	n	%	n	%
Availability and competence of human resources	55	73.3	20	26.7
Availability of Standard Operating Procedures	65	86.7	10	13.2
Availability of hospital policies related to INM	67	89.3	8	10.7
Availability of infrastructure	66	88.0	9	12.0
Safe and comfortable working environment	67	89.3	8	10.7

In addition, the work environment in each respondent's unit supports the achievement of quality. It can be seen from the fact that 92% of employees agreed that the relationship between employees, partner doctors, and young doctors was good and harmonious, and 98.6% of employees agreed that each employee and doctor had always tried to serve patients professionally. However, what should be of concern is the availability and competence of human resources that belong in the less than good category (26.7%) more than the other aspects like passion with quality (18.7%), education and training (17.3%), and continuous system improvement (16%). (Table 2)

The component that required improvement efforts from structure variables was the availability and competence of employees. Based on in-depth interview results, one of the obstacles of hospital is limited human resources, especially in the quality department and dental nurses. According to a study, limited human resources can be caused by several things, one of which is the mismatch between the expectations and reality of employees or prospective employees towards benefits at work.(12) The study at Orthopedic Hospital Prof. Dr. R. Soeharso showed that rewards and salary have a significant effect on job satisfaction of nurses.(13) A study found that the main factor in health facilities having difficulty achieving quality indicator targets is the mismatch in the quality and quantity of human resources, such as the presence of multiple tasks that cause a decrease in employee performance.(14) Another human resource-related obstacle faced by hospital is the performance competence of the employees themselves. This finding is in accordance with the results of in-depth interviews in the preliminary survey, which stated that employees often work undisciplined and still do not improve their performance. In this case, the hospital updated the performance appraisal indicators according to the hospital's conditions. It is because previously, the performance appraisal referred to the university, not the hospital, to monitor every employee's behavior and performance. This employee performance appraisal guideline is used by the head of the wards and the head of the sections and will be evaluated every 1, 3, and 6 months. This evaluation is used as an

improvement for employees and consideration for the management for the extension of employee employment contracts. This is supported by findings in a study where the management of human resources and the provision of infrastructure are factors that affect the quality of hospital services.(12)

The process variables included behavior that produces quality services by employees. Process variables are measured using the 10 components of TQM. The process variables implemented the best were scientific approach (96%), customer focus, team work, and long-term commitment (94.7%) (Table 4).

Customer focus is the most implemented variable to deliver quality services based on the fact that the majority of respondents (94.7%) had a good perception of it. This is in accordance with a study on the implementation of TQM principles in Jordanian Hospitals, where the customer focus factor was the most implemented principle to deliver quality services in hospitals.(15) This also aligns with the results of the secondary document review, where the achievement of national quality indicators in the aspect of patient satisfaction has reached 94%, exceeding the target of January to May 2023. Patient satisfaction is defined as a situation where customer needs, wants, and expectations can be met through the services received in health care services, including physicians' behavior. Patient satisfaction can be achieved through good interactions between employees and doctors, which creates cooperation and synergy in providing satisfaction for patients.(16)

Meanwhile, teamwork intended to achieve a common goal has resulted in good cooperation from all employees. As many as 96% of employees agree that they are able to work together and synergize in providing services to patients. The efforts made by the hospital are supported by the good perceptions of 94.7% of employees regarding the cooperation component in the hospital and are similar to a study which states that in an organization that implements Total Quality Management, teamwork, partnerships, and relationships are established and fostered, both between employees and suppliers, government institutions, as well as the surrounding community.(17)

Based on the research findings, 96% of employees have a good perception of the scientific approach aspect. This is supported by the observation that hospital has provided a library room as a place for scientific references in drafting a regulation or making decisions on a problem. In the United States, the hospital library is one of the important resources for the medical community, which over time continues to be developed in terms of staff, resources, and accessibility, which is expected to provide the best medical information to support improved service to patients.(18) In addition to providing library in fulfilling scientific approach references as the basis for all service activities, hospitals also provide Wi-Fi facilities that can be accessed by all employees, as well as maximizing the organizational functions of each committee to ensure the renewal of scientific reference sources used.

The next most implemented component was long-term commitment. All hospital employees need to have the same commitment to achieving the vision, mission, and goals. Employee commitment can be seen through their trust and loyalty to the hospital. One definition of trust is the open ability of one party with the second party based on the belief that the second party can fulfill competent, trustworthy, open, and reliable behavior.(19) This is supported by a study stating that trust has a direct effect on organizational commitment.(17) Meanwhile, a lack of trust will have an impact on reducing employee commitment. Based on in-depth interviews, one of the problems that sometimes arises was the lack of employee trust in hospital management regarding the transparency of salary calculations, allowances, and incentives. Thus, it should be rectified by the hospital management to ensure that employee trust is maintained.

Based on this study, there were four components of TQM that need to be improved. The first component is obsession with quality, which can be seen from the quality

of work of each employee in their wards. Based on the introduction conducted, performance appraisal at the hospital is carried out for all employees, both medical and non-medical, using the employee job performance assessment guidelines to periodically see the quality of their work. The aspects assessed include work performance, responsibility, obedience, and cooperation. The purpose of performance appraisal is to improve quality of care, performance monitoring, motivation, identification of educational needs, employee rewards, and training. The indicators of performance appraisal should be clear, reliable, understandable, measurable, relevant, and explained to the employee by the direct supervisor.(20)

The second component is passion with quality. Based on the results of the questionnaire, 81.3% of respondents perceive the quality obsession component. In doing their work, the majority of respondents (88%) agree that there is always coaching for them in meeting quality standards while working. This is reinforced through the introduction made by researchers that every month, hospital always holds meetings that discuss employee performance and hospital achievements. To continuously improve its quality, the hospital is always fast and responsive, including with regard to quality in the customer perspective. Customers are the judges of quality. All strategic decisions made by healthcare institutions are customer-driven, measuring the factors that drive customer satisfaction.(21)

The third component that needs to be improved is continuous system improvement. In providing good service and satisfying patients, hospitals need to evaluate continuous improvement. Based on the results of the study, it is known that the hospital is carrying out a continuous system improvement effort. Some of the things that have been done were monthly meetings related to achievements, obstacles, and improvement efforts from the

Table 4. components of process variable

Process Variable	Good		Less Than Good	
	n	%	n	%
Customer Focus	71	94.7	4	5.3
Passion with Quality	61	81.3	14	18.7
Teamwork	71	94.7	4	5.3
Scientific Approach	72	96.0	3	4.0
Long-term Commitment	71	94.7	4	5.3
Continuous System Improvement	63	84.0	12	16.0
Education and Training	62	82.7	13	17.3
Controlled Freedom	62	82.7	13	17.3
Unity of Purpose Aspect	67	89.3	8	10.7
HR Engagement and Empowerment	67	89.3	8	10.7

activities carried out. A study on the Emergency Services of Dumai City Hospital showed that continuous system improvement is related to the implementation of TQM. (22) Improving quality system should be a continuous and systematic process that consists of four key principles: compliance to systems and processes, patient-focused teamwork, multidisciplinary work processes, creativity, and commitment to quality and acceptance of solutions. (23) A lesson learned from quality improvement initiatives in intensive care revealed that quality improvement comes from identifying and managing feedback from quality data. The process of healthcare improvement is fundamentally a human endeavor, which is subject to behavioral changes, including those that alter performance. The standards should be dynamic to meet the evolving needs of the healthcare system and its stakeholders. (24)

The fourth component is education and training. In managing their human resources, hospitals need to develop the attitudes, skills, and abilities of available human resources by providing education and training to support performance and increase employee loyalty. A study found that higher formal education and competence training are associated with an improved job performance of nurses working at a hospital. (25) Unimus Teaching Hospital of Dental and Oral has a high commitment to this component, as seen from the results of the questionnaire where 80% of employees agreed that they received training facilitated by the hospital in supporting the achievement of national quality indicators and 85.3% stated that the training they received while working could improve their abilities and expertise in providing quality service to patients. In training, the type of learning method for employees also needs to be considered, such as in a study stating that the application of the Problem Based Learning (PBL) - Case Based Learning (CBL) method combined with the simulation learning method produced a significant impact on improving skills for employees. (26)

The obstacle faced by the hospital in achieving national quality indicators is the lack of knowledge by all employees about the indicators themselves. To date, hospital continues to increase understanding of knowledge about national quality indicators to all employees through internal education and training. Knowledge related to national quality indicators then becomes a target for the hospital this year. The quality committee section develops knowledge related to this indicator by attending training outside the hospital so that it can then provide information to the heads of wards and sections so that each of them inform their subordinates, ensuring that awareness of the achievement of this indicator would be evenly distributed.

The limitation of this study is that the descriptive quantitative research method only analyzes the univariate

variables, but it is less able to explain the relationship and influence of each of these variables. The strength factor of this study lies in the problems raised, which are actual problems for hospitals and must be solved by management.

CONCLUSION

The conclusion is that Unimus Teaching Hospital of Dental and Oral had reached the national quality indicator target except for compliance with doctor visit hours (69%). To improve this aspect, it is necessary to have clear information about the doctors' arrival time. Management can provide a screen in front of the polyclinics that shows information about the queue with the patients' names.

The implementation of 10 aspects of TQM has been well implemented. Still, improvement needs to be made in the aspects of insufficient number of employees and inappropriate employee competencies, aspects of passion with quality, aspects of education and training, and aspects of continuous system improvement. The hospital management can collaborate with the human resources department to conduct a human resource needs analysis, training and education needs according to the competencies of the work that support the employees and doctors. Hospital management can involve all employees and doctors to provide detailed advice on each work for continuous improvement.

Acknowledgment

Thank you to the Faculty of Public Health, Diponegoro University, for supporting and funding this study. We would also like to thank Unimus Teaching Hospital of Dental and Oral, and its staff for their support and cooperation in taking the time to fill out our research questionnaire.

Conflict of Interest

The authors declare that there is no conflict of interest.

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