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Provider-perceived dimensions of total quality management in healthcare

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Abstract

Purpose – The purpose of this paper is to highlight key dimensions of provider-perceived total quality management (TQM) in the healthcare sector in India. Further, the impact of the dimensions of provider perceived TQM on hospital performance is examined.

Design/methodology/approach – A questionnaire has been developed based on an extensive literature review of research in service quality and based on responses of the pilot survey among medical professionals. The instrument thus developed has been examined for its psychometric properties using tests of reliability and validity. Multiple regression analysis has been used to examine the impact of the dimensions of provider-perceived TQM on hospital performance.

Findings – Findings highlight 14 distinct dimensions of provider-perceived TQM and the relationships among them. Positive and significant relationships among the dimensions and hospital performance have been found.

Research limitations/implications – Contribution to research on healthcare quality by the development of a comprehensive instrument of provider-perceived healthcare quality.

Practical implications – This instrument would enable hospitals to examine the quality of care being delivered by them to the patients. Hospital administrators and medical professionals could use this feedback to assess hospital performance, and benchmark their performance against that of other competitive hospitals.

Originality/value – Comprehensive instrument of provider-perceived healthcare quality

Keywords Health services, Total quality management, Hospitals, India

Paper type Research paper

Introduction

Since the advent of liberalization and globalization, companies across the globe have been forced to improve the quality of the products and services they offer. A widely used technique of quality improvement is TQM. The present study is an attempt to identify and highlight the critical dimensions of health-care quality. Based on a thorough review of literature on the empirical, theoretical and practitioner studies on health care, the various dimensions of TQM in hospitals from the viewpoint of the provider of care, have been identified. The providers of care considered in this study include doctors, nurses, paramedical and support staff (administrative and clinical) across different levels in the hospital organization.

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Several studies have described quality in health care, while emphasizing the importance of implementing TQM in health care. Ovretveit (1997) explained quality in health services as fully meeting the needs of those who need the service most, at the lowest cost to the organization, within limits and directives set by higher authorities and purchasers. In a related study, Ovretveit (2000) emphasized the main lessons of introducing TQM in health care such as quality leadership, resistance and opposition, variety of experiences, involvement of doctors, special training for doctors, training facilitators, selecting strategically significant quality projects and managing them for results, measuring quality, covering all services, and invoking the soul and spirit of quality with emphasis on professional values.

Identification of critical dimensions of provider-perceived TQM in hospitals

Considering the relevance of TQM in health care, an instrument that identifies the operating elements of TQM in hospitals from the viewpoint of the health-care service providers is developed and validated in the present study. The following are the critical factors of provider-perceived TQM in hospitals that have been identified in this paper:

(1) Top management commitment and leadership (TM).

(2) Human resource management in the hospital (HR).
   - Selection (HRS).
   - Training (HRT).
   - Employee involvement (HRE).

(3) Process management (PM).
   - Ease of access to the hospital, and ease of admission processes and procedures (PME).
   - Administrative services (PMR).
   - Processes: administrative and clinical (PMA).
   - Exit (PMX).
   - Clinical outcomes of medical care (PMC).

(4) Hospital facilities and infrastructure (HF).

(5) Patient focus (PF).

(6) Employee focus (EF).

(7) Measurement of hospital performance (MH).

(8) Hospital information system (HIS).

(9) Errors, safety and risk management (EM).

(10) Service culture (SC).

(11) Continuous improvement (CI).

(12) Benchmarking (BM).

(13) Union influence (UI).

(14) Governance and social responsibility (GS).

A detailed discussion on the dimensions of the provider's perception of TQM in hospitals is presented in the following section.

Top management commitment and leadership

The role of the top management is critical to the success of any TQM initiative. Several studies have stated that since techniques such as successful continuous quality improvement (CQI) implementation may require a sustained effort over several years, organizational members depend on the leadership of the CEO and senior management to understand and interpret the relevant environmental pressures, and to position CQI within the overall hospital strategy (Satia and Maj-Britt, 1999). In the healthcare context, the hospital CEO leads the change effort required for the success of the quality initiative. Tabish (1998) found that management and leadership in health care involved an individual's efforts provide professional care, devise creative strategies, cost-controlled programs, along with the abilities to research and analyze systems critically and chart growth in response to rapid health care changes. Lighter (2000) focused on the growing trend of physicians in the business of health care, owing to their breadth of experience with patients, institutions, insurers and peers. In another study on leadership, LeBrasseur *et al.* (2002) found that a CEO committed to implementing CQI as a transformational leader led to stronger signs of CQI success than a middle management initiative. Horowitz *et al.* (2003) reported success of a project to reduce length of stay, reduction in unnecessary diagnostic study utilization, and improvement in materials management, because of senior leadership support. In a study on the role of leadership in services, Prybil (2003) discussed the key organizational, cultural, workforce-related, patient- and community related challenges and constraints facing leaders in health care today. Therefore, as seen in research, top management commitment and leadership remains a critical dimension of TQM in healthcare.

Human resource management in the hospital

This dimension reviews research on nurses, support staff, paramedical staff and administrative staff, and focuses on clinical improvement, role of physicians in health management, by involving them more closely in health service management, in addition to their traditional role as care givers (Scott, 2000; Spurgeon, 2001), new paradigms in clinical care delivery, physician's views on health care practices (e.g., Thompson *et al.*, 2003)), and doctors' perceptions of quality and physician satisfaction (Newman and Pyne, 1996). Focusing on the role of the workforce in healthcare, Sekhar (2002b) stressed that the effectiveness of a hospital is dependent on the quality of services delivered, and the work effort expended by its employees.

Selection. Research has highlighted the importance of proper selection and recruitment in the service sector. Newman *et al.* (2002) conducted a study on nurse retention where the complex interdependence between government, service capability and quality, nurse satisfaction and retention and patient satisfaction are highlighted.

Training. A second critical factor in human resource management is employing training practices to ensure that the employee is equipped with the right skills to face the demands on the job, especially in a critical area such as healthcare. In a hospital setting, there is a need for continuous training of the staff in the areas of patient care services. The aim of any training program is to provide instruction and experience to new employees to help them reach the required level of performance in their jobs, quickly and economically (Sekhar, 2002a). Hasin *et al.* (2001) recommended training at all levels in the

healthcare organization as an important requirement to improve quality. For the existing staff, training will help develop capabilities to improve their performance in their present jobs, to learn new technologies or procedures and to prepare them to taken on increased and higher responsibilities in the future. In their study on nurses, Newman *et al.* (2002) found that in changes in nurse training, increased numbers of training places and funding of more posts as well as flexible and family friendly working practices are necessary to improve nurse retention and satisfaction.

Employee involvement. No quality program can succeed without the active involvement of all the employees concerned. Several studies have highlighted what exactly constitutes employee involvement in the quality initiative. Lord and Lawrence (2001) explained how employee involvement is reflected in organizations: when operators are responsible for detecting, recording and solving their own problems, usually in small groups. Bradley *et al.* (2003) identified factors related to management involvement in quality improvement efforts, such as, personal engagement of senior managers, management's relationship with clinical staff, to name a few. Therefore, employee involvement in the quality initiative is critical to the success of the TQM program.

Process management

This dimension assesses the processes undergone by the patients at different times of their stay in hospital. In a study on process management in healthcare, Leer *et al.* (1995) reported the development of an ISO based system in the radiotherapy department of a large hospital. In so, documenting the processes concerning a patient, from the moment he/she enters the department until the moment he/she will finish treatment, were written down in flowcharts. In a similar study, Rissanen (2000) noted that control of processes is a key element in the successful care of high quality, where the processes were determined as key activities or service groups. In another study on process management, Staines (2000) reported how a Swiss hospital steering committee grouped all the activities in the hospital into major processes (modules) and divided them into management, care (in the centre) and support activities. Over a year, the hospital concentrated on analyzing its processes.

The following sub section highlights some crucial process management dimensions in health-care quality.

Ease of access to the hospital and admission process and procedures. This dimension assesses the provider's perception of the ease of access, admission, stay, treatment and discharge procedures in the hospital, acceptance of emergency cases, reduction in unnecessary patient stays, waiting time, etc. Tabish (1998) emphasized the complex interplay between medical, paramedical and administrative staff in determination of admission and discharge policies of the hospital.

Management of patients' records. This dimension examines the way in which the patient records of their treatment and care are stored and their ease of retrieval in case of follow-up or for future patient visits. Edwards (2002) described a medical record as a compilation of pertinent facts about a patient's life and health history, including past and present illnesses and treatment given by health professionals contributing to the patient's care. Efficient management of patient records is important to ensure the follow up of cases and thus ensure proper delivery of medical care.

Processes: clinical and administrative. This dimension is related to the treatment procedures and practices to monitor maintain and improve patient care in the hospital,

such as case-conferences, etc. this process of examining clinical and administrative processes is called a clinical audit and is undertaken by hospitals to assess the quality of clinical and administrative services provided to the patient.

Exit. After treatment, when the patient is ready for discharge from hospital, there are discharge procedures to be completed by the patient and/or his/her family. The ease of discharge procedures and the advice given by the doctor in charge with regard to post-treatment care and follow-up have important implications for the recovery and management of the patient from the illness/injury. This dimension assesses the practices prevalent in the hospital with regard to post-discharge case management, handling patient complaints, etc.

Clinical outcomes of medical care. This dimension is an assessment of the clinical outcomes of medical care in terms of frequency of nosocomial (hospital-acquired) infections among patients, regular improvement of treatment quality based on treatment effectiveness and continuous appraisal to the patient with regard to the details of their treatment, possible complications, etc. Assessment of clinical outcomes of medical care is critical to ensure overall quality of care delivered to the patient.

Hospital facilities

The management and maintenance of hospital infrastructure and facilities keeping in mind the comfort and recovery of patients are explored in this dimension. Facilities such as blood bank, family welfare, dental technology, dietetics and therapeutics, drugs and pharmacy, electricity, transport, housekeeping, should be maintained to provide quality care to the patient.

Patient focus

As the primary recipient or end-user of the product or service, the customer's experiences with the quality of product or service becomes critical in evaluating the quality of delivery of the product or service. Therefore, examining the customer's viewpoint becomes essential. For the purpose of this study, the individual who seeks medical cure for an ailment or other injury, i.e. a patient, is considered as a customer of health care. It is important to make this distinction because customers have been distinguished as "external" and "internal" to the organization. An external customer (such as a patient) exists outside the organization and buys the organization's products or services. An internal customer is one who receives a product or service, and, in exchange, provides a product or service (Besterfield *et al.*, 2001).

It has been observed that the main difference between a customer of other kinds of services and the customer in health care is that the latter is under a great deal of either physical discomfort or emotional distress, or a combination of both. This is in contrast to the customers of other services, who do feel the need to avail of a service, yet they have a sense of well being and are free from the acute discomfort or distress characteristic of patients in a hospital. This distinction needs to be kept in mind when defining a patient-centered policy of health-care quality. Studies have consistently shown that the best results of clinical care, provider and patient satisfaction are obtained with a clear patient focus. In one such study, Martin (2001) developed consumer focused benchmarking criteria from consumers in healthcare, education and retail sectors, in order to examine their perception of service quality. She found that consumers could provide invaluable insights into development of competitive and

generic benchmarking measures. Martin (2001) revealed that satisfied patients were those who have personal physicians and dentists who actively promoted their participation in their care, spent adequate time and were attentive to their needs. Thus, a clear patient focus is an important factor in determining patient satisfaction.

Employee focus

An important determinant of quality health care is the focus on the employee delivering the service. Several studies have focused on the different aspects of employee focus and satisfaction. In one study, Pestonjee and Mishra (1999) explained the difference in job satisfaction of senior and junior doctors as probably being due to the fact that senior doctors enjoyed greater authority, participation, satisfaction with reward and pay system and autonomy as compared to the junior doctors. In addition, junior doctors were prone to be blamed even for minor errors; they felt that the equipment they used was mostly outdated and lacked sophistication and that the support staff was indifferent to their needs. An important component of employee focus is providing employees constructive feedback about the quality of care delivered by them. Donabedian (2000) stated that clinical quality and performance should be systematically measured to provide feedback to the providers of care regarding their performance on the job. The study proposed a system of assessment that includes attributes, activities and achievements. Thus, a clear employee focus is an important dimension of healthcare quality.

Measurement of hospital performance

Measurement of quality of health care is done by a process called medical audit or clinical audit. Ovretveit (1993) described organization quality audit as an examination of an organization's arrangements to control and ensure the quality of its products or services. In this study, the author compared different auditing and award frameworks for service quality (namely, the BSI Quality Management System, the Malcolm Baldrige National Quality Award, European Foundation for Quality Management (EFQM) Award and the Brunel Strategy for Organization of Services (SOS) Model), from the viewpoint of the purchaser. Other models such as the SERVQUAL instrument (Parasuraman *et al.*, 1985), the ISO 9000 model, the Malcolm Baldrige National Quality Award (MBNQA) and the European Foundation for Quality Management (EFQM) are used by health care units as a means of measuring hospital performance. A comparison of the existing frameworks with that of the present study is presented later in this study.

In a related study, Samson and Terziovski (1999) demonstrated how three of the elements of TQM (leadership, people management and customer focus) had a significantly positive effect on operational performance. Bhat *et al.* (2001) found grant-in-aid hospitals to be relatively more efficient than the public hospitals. In this study, the management and administration of the hospital was found to have a significant impact on the performance of the hospital. Eggli and Halfon (2003) proposed a rigorous and simple model specific to hospitals, based on four entities (patients, activities, resources and effects) and six levels in order to measure the development of quality management systems. Gibbons and Dhariwal (2003) highlighted the importance of good audit practices, which can be attained through leadership, organization, guidelines and individual motivation.

Therefore, an important factor in evaluating healthcare quality is assessment of hospital performance. Price (2005) examined measurement of performance outcomes in

a laboratory medicine and demonstrated how benchmarking in laboratory medicine is isolated from its clinical setting, and are concerned mainly with the process (efficiency and productivity) of laboratory medicine, rather than a focus on care of patients (outcome and value). Thus, the need for a more integrated approach to benchmarking of performance effectiveness of laboratory medicine is highlighted in this study.

Hospital information system

A key component of quality in any organization, particularly in a hospital, is its information system. Indian health care is possibly affected by a lack of standardization and accreditation, highlighting the need for information management expertise. The patient record storage and retrieval system in different hospitals is greatly enhanced by the use of HIS, which enable the efficient storage, and retrieval of patient data. Such technology will facilitate the hospital's ability to respond quickly to rapid and often unexpected changes in patient needs. In one such study by Azim *et al.* (1999), a card-based information system assisted service providers in following assessment protocols according to the standards set by the organization. Rao (2002b) emphasized that the primary objective of a HIS should be cost-effective, leading to an enhanced quality of patient care. However, present HIS have several gaps, such as those between billing and patient care, main hospital and satellite or diagnostic centre, gap between doctors and software developers. Rao (2002b) predicted that the future of HIS would be in telemedicine, medical records, smart cards, digital libraries and multimedia. Prasad and Tata (2006) in a recent study offered a prescriptive framework to benchmark information services around the world. The framework thus developed helps to benchmark countries relative to different information services in the context of their development and culture.

Errors, safety and risk management

One critical component of quality health care provided is the safety and risk management procedures that the hospital has in place in order to ensure correct and risk-free treatment procedures for the patient. In this context, it is useful to define a medical error. The Institute of Medicine (IOM) (1999) defined a medical error to be "the failure of a planned action to be completed as intended (that is, an error of execution) or the use of a wrong plan to achieve an aim (that is, an error of planning). The errors were classified into three categories: *under use overuse* and *misuse* McFadden *et al.* (2004) discussed the sources of medical errors and adverse events, critical factors for reducing the occurrence or impact of medical errors, barriers to implementation of error management systems and proposed a model, called the PROCESS framework, for reducing errors in hospitals. Risk management develops a system to identify clinical areas of risk, establishing means to monitor patient care, including evaluation care as indicated and taking action to improve care (Tabish, 2001).

Service culture

The concept of service culture has been widely researched and remains one of the most important factors in organizational behavior literature. In one study, Yoon *et al.* (2001) examined work climate variables and their impact on service quality and showed that both climate variables contribute directly to job satisfaction and work effort, and indirectly impact on customers' perception of employee service quality. Thus, a service-oriented culture is likely to contribute to better healthcare service delivery.

Continuous improvement

Continuous improvement (CI) is the use of incremental and breakthrough quality management techniques to constantly improve processes, products, or services provided to internal and external customers and thus achieve higher levels of customer satisfaction. McLaughlin and Kaluzny (1999) discussed CQI in terms of focusing on clinical performance improvement, specifically, evidence-based medicine, case management, disease management and patient-centered care.

Measurement of the quality of care requires continuous assessment of the factors that contribute to a favorable outcome of patient care such as service providers, the environment of health care delivery, organization and management, human resource development and management, policies and procedure, facilities and equipment and quality improvement activities of an organization. In one such study, Hasin *et al.* (2001) found that continuous improvement of TQM was very helpful in increasing competitiveness in hospitals and many other health care organizations. Samuel *et al.* (2000) studied the improvement in quality of the Family Planning and Health Services provided by the State in India, by regularly monitoring and measuring them. This strategy was found to lead to some improvements in quality of care delivered.

Benchmarking

Benchmarking is an important concept in TQM. Besterfield *et al.* (2001) explained benchmarking to be a systematic method by which organizations can measure themselves against best industry practices. Benchmarking provides an organized framework through which organizations learn how the "best in class" do things, understand how these best practices differ from their own, and implement change to close the gap. The Malcolm Baldrige National Quality Award similarly requires that the applicants benchmark external organizations. Dattakumar and Jagadeesh (2003) stated that there has been a proliferation of literature on the topic of benchmarking in the last 15 years, indicating the growth and maturity in the application of benchmarking as a technique. Yasin (2002) reviewed the literature related to benchmarking practices and theory in health care and found that the earlier stages of benchmarking developments stressed a process and/or activity orientation. Recently, however, the scope of benchmarking appears to have expanded to include strategies and systems. Northcott and Llewellyn (2005) identified a gap in between policy and implementation of benchmarking in healthcare in UK: while the stated objective of benchmarking is sharing of best practices, the operationalization of benchmarking is in the form of league tables and standardized benchmarks for performance, thus indicating a gap between policy and practice.

Union intervention

Union-management relations have important implications for delivery of service. In a study on unions, Sekhar (2002b) explained how the existence of unions is likely to create inter-union rivalry, vested interests, productivity decline, services coming to a standstill and poor image. Focusing on the positive outcome of unions, Wagar and Rondeau (2002) concluded that labour-management cooperation is essential if health care organizations are to achieve their valued performance objectives. This study examined the impact of labour-management forums and labour climate on employee and organizational outcomes and found that the greater use of LMCs (labor-management committees) was associated with a positive change in workplace performance.

Governance and social responsibility

Any organization needs to incorporate "service to society" in its long-term strategic objectives. It is imperative for an organization to keep in mind the welfare of the society as a whole while designing its quality policy. No organization can be said to have succeeded in its mission truly, unless it is able to contribute significantly to the well being of the people whom it is meant to serve. Values of governance, social responsibility and ethics are relevant to healthcare in a critical manner. Casarett and Abrahm (1999) discussed how physicians have always had some obligation to society, and they have always been asked to balance this obligation against an obligation to the patient. A healthcare organization that incorporates values of governance and social responsibility is able to offer better quality of care to individuals, in an ethical manner, thus serving society as a whole. On the basis of discussions and literature review presented in respect of each of the 14 TQM dimensions presented above, Table I offers a compilation of explanation of each dimension.

Empirical validation of the dimensions of provider-perceived TQM in hospitals

Methodology

In order to study the providers' perception with regard to their views on what constitutes quality in health care, a comprehensive survey of theoretical, practitioner and empirical research in this area has been done. The literature review has revealed key constructs of quality in health care as viewed by the providers of care, namely the doctors, nurses, paramedical and support staff of a hospital. On the basis of the identification of critical factors of health-care quality, a questionnaire is framed to bring out the key operating elements of TQM in health care. This questionnaire has been administered to a small sample of respondents involved in healthcare management, who have tested the questionnaire for its validity. Based on the responses obtained from the pilot survey, changes have been made to the questionnaire, as considered appropriate, and the final questionnaire has been framed. The complete questionnaire with the 107 items is presented in the Appendix.

The dimensions presented in the Appendix have been jumbled and administered to the respondents in government and private hospitals located in major cities in the states of Tamil Nadu and Gujarat in India. The states have been chosen for the sake of operational ease and viability, from the standpoint of the researcher. The respondents included medical, nursing, and paramedical and support staff of the hospitals surveyed. A total of 100 responses have been obtained after sending out 300 questionnaires to different hospitals across India. This yielded a response rate of 33 percent. The questionnaires have been sent to more than one person in a hospital to get a more comprehensive perspective of quality practices in the hospital. Questionnaires have also been sent out by post to a few of the hospitals, specially those located in areas distant from the capital cities of Tamil Nadu and Gujarat, which would have been otherwise been time consuming for the researcher for data collection. Adequate care has been taken to represent different specialties of the medical profession within the sample. A few specialty hospitals have also been covered as part of the sample; however, their number is inadequate to conduct a separate analysis for this particular class of hospitals. On the whole, tertiary care hospitals have been covered as part of the sample, and those hospitals with 50 beds and above have been chosen to be part of the study. The number of beds (i.e. 50) as cut-off has enabled the study of different

Dimension	Explanation
Top management commitment and leadership	The role of the top management in spearheading the quality initiative in the hospital is of critical importance to the success of the quality program in the hospital
Human resource management in the hospital	This dimension incorporates human Resource Management processes such as selection/recruitment, training and employee involvement in the implementation of TQS constructs in an organization
Process management	Process Management in the context of health care refers to the medical care and administrative processes that the patient needs to undergo as part of his experience with medical care at a particular hospital. Thus, this dimension measures the different aspects of process management in terms of admission procedures, administrative services, administrative and clinical services, discharge processes and the clinical outcomes of medical care
Hospital facilities	This dimension assesses the management perception of quality of the infrastructure provided in the hospital, in terms of blood bank, pharmacy, X-ray, CT scans, ambulance services, etc.
Patient focus	Since the focus of health care is ultimately the patient, it is of critical importance that the hospital has patient welfare at the *centre* of its vision, mission and objectives. A hospital with its focus as patient welfare would implement a feedback mechanism have reasonable cost of medical care, and offer patient counseling services by the doctors and support staff for patient well-being and satisfaction
Employee focus	In order to deliver high quality patient care, it is vital that the hospital has a clear focus on the welfare of its doctors, nurses, paramedical, support staff and administrative employees. For this purpose an employee grievance redressal system, regular and systematic measurement of employee satisfaction and a well-defined financial reward system are some of the measures that are used by organizations
Measurement of hospital performance	In order to monitor the performance of any organization, it is important that the management collects certain critical measures of performance such as data related to birth and death rates, treatment failures, patient admissions and discharges, surgeries done, medical cases handled, bed occupancy rates, financial statistics, patient satisfaction and measures of the hospital's recognition in society
Hospital information system	This dimension measures the extent of efficiency of the computer system staff of the hospital in analysis of data relating to the patients, as well as the hospital administration and clinical and non-clinical staff of the hospital
Error management	This dimension measures the attitude and perception of the hospital management towards managing risk and errors in medical care. The different types of errors and error reporting systems are assessed in this dimension
Service culture	In this dimension the perception of an attitude of concern and care shown by the clinical and non-clinical staff of the hospital towards patients is assessed

(*continued*)

Table I.
Critical dimensions of provider-perceived TQM in hospitals

Dimension	Explanation
Continuous improvement	Continuous improvement in every facet of the organization is the only way to leading it to higher levels of productivity. It is the process of continuous improvement in small increments that make the process more efficient, effective, controlled and adaptable. CI focuses on simplification by breaking down complex processes into their sub-processes and improving them
Benchmarking	Benchmarking involves examining those firms that are best at performing a certain process or group of processes, studying that process or group of processes, and then transplanting the methods into one's own organization. Using benchmarking, a company which is exceptional in a particular field is selected and used for measuring one's performance
Union influence	In many organizations, unions play a key role in the functioning of the organization. In hospitals, the role of the employee union and the doctor's unions are examined with respect to the role they play in recruitment and selection, improvement in patient focus, human resource policies and overall functioning of the hospital
Governance and social responsibility	This dimension assesses the extent to which the hospital shows social and ethical concern to the needs of its patients. This can be viewed in different ways, for example, in terms of the hospital providing free or subsidized ambulance or medical services to the poor, proper waste management, maintaining confidentiality of patient records, etc.

Table I.

aspects of the hospital set up, which would have not been possible if smaller hospitals had been included in the sample. For example, the study of functioning medical equipment to cater to different medical needs of the incoming patients may not be possible in a smaller hospital. The questionnaire is a seven point Likert scale (from 1 indicating very low, to 7 indicating very high).

Tests of scale refinement and validation of the dimensions of provider-perceived TQM in hospitals

Malhotra (2004) explained that the process of scale development begins with an underlying theory of the construct being measured. A theory is necessary not only for constructing the scale, but also for interpreting the resulting scores. This has been achieved in the present study through an extensive review of literature on TQM to identify the critical dimensions of TQM in the health-care sector (Section 2). The next step is generating an initial pool of representative scale items to measure each factor of TQM in health care. This is done based on theory, analysis of secondary data and qualitative research. From this pool, a reduced set of potential scale items is generated by the judgment of the researcher and other experts in the field (testing for content validity). The scale thus obtained is evaluated for its reliability and validity by collecting more data from a large sample. The collected data is tested for its underlying dimensions using either exploratory or confirmatory factor analysis. On the basis of these assessments, a final set of scale items is selected. In order to measure the unidimensionality of the given instrument, the following hypothesis has been proposed:

H1. Provider-perceived TQM in hospitals is a 14-dimension structure consisting of the above-mentioned 14 dimensions.

Moreover, multi-item scale should be evaluated for reliability, validity and generalizability. Approaches to assessing reliability include test-retest reliability, alternative-forms reliability and internal consistency reliability. Validity can be assessed by examining content validity, criterion validity and construct validity.

Reliability. Reliability refers to the extent to which a variable or a set of variables is consistent in what it is intended to measure. If multiple measurements are taken, the reliable measures will all be very consistent in their values. In other words, if the same measure is taken repeatedly, more reliable measures will show greater consistency than less reliable measures. The rationale for internal consistency is that the individual items or indicators of the scale should all be measuring the same construct and thus be highly intercorrelated.

The Cronbach's alpha measure is a widely used reliability coefficient that assesses the internal consistency of the entire scale. It is the average of all possible split-half coefficients resulting from different ways of splitting the scale items. This coefficient varies from 0 to 1. It is appropriate to use internal consistency reliability for each dimension if several items are used to measure each dimension (Malhotra, 2004). In the present study, TQM in health care is measured using different dimensions of TQM, each of which is measured by several items, and hence computing the Cronbach's alpha or the coefficient alpha to measure the internal consistency of each dimension is justified. The generally agreed-upon lower limit for Cronbach's alpha is 0.70 (Hair *et al.*, 1998). Table II shows the Cronbach's alpha values for each of the 14 provider-perceived TQM dimensions in hospitals. All the values are 0.75 and above, indicating a strong reliability of the questionnaire.

Table II.
Unidimensionality, reliability and convergent validity for the 14 dimensions of provider-perceived TQM in hospitals

Dimension	Bentler-Bonnet fit index (Δ)[a]	Comparative fit index (CFI)[b]	Cronbach's α [c]
Top management commitment and leadership	0.934	0.992	0.921
Human resource management in the hospital	0.915	0.956	0.881
Process management	0.921	0.954	0.782
Hospital facilities and infrastructure	0.980	0.985	0.816
Patient focus	0.909	0.943	0.832
Employee focus	0.913	0.944	0.864
Measurement of hospital performance	0.986	0.904	0.857
Hospital information system	0.901	0.916	0.875
Errors, safety and risk management	0.992	0.982	0.761
Service culture	0.922	0.940	0.854
Continuous improvement	0.970	0.990	0.863
Benchmarking	0.930	0.963	0.947
Union influence	0.919	0.970	0.751
Governance and social responsibility	0.921	0.960	0.779

Notes: [a]Bentler Bonnet Fit Index of 0.90 and above shows strong scale convergent validity. [b]Comparative Fit Index of 0.90 and above shows strong scale unidimensionality. [c]α value of 0.70 and above shows strong scale reliability

Validity. Malhotra (2004) defined the validity of a scale as the extent to which differences in observed scale scores reflect true differences among objects on the characteristic being measured, rather than systematic or random error. In other words, validity refers to the degree to which a scale measures what it purports to measure. Different forms of validity testing are available to ensure that the instrument actually measures what it purports to measure.

Content validity. Content validity subjectively assesses the correspondence between the individual items and the concept through ratings by expert judges, pretests with multiple subpopulations, or other means. This form of validity is also called face validity (Malhotra, 2004, and Hair *et al.*, 1998). The content validity of the questionnaire used in the present study has been ascertained through a pilot survey among doctors and health administrators, who have offered their views and suggestions with regard to the content of each of the dimensions included in the questionnaire. Changes based on their feedback have been made, as appropriate.

Convergent validity. Convergent validity assesses the degree to which two measures of the same concept are correlated. Here, the researcher may look for alternative measures of a concept and then correlate them with the summated scale. High correlations here indicate that the scale is measuring its intended concept. Thus, convergent validity confirms that the scale is correlated with other known measures of the concept (Hair *et al.*, 1998). The Bentler-Bonett coefficient is used widely as a popular measure of convergent validity (Bentler and Bonett, 1980; Bentler, 1995). In this study, the Bentler-Bonett indices are computed for each of the 14 dimensions of provider-perceived TQM in hospitals, and it is found that they are 0.90 and above, indicating a strong convergent validity of the questionnaire (Bentler and Bonett, 1980). The BFI indices for the 14 dimensions of provider-perceived TQM in hospitals are shown in Table II.

Criterion validity. Criterion validity reflects whether a scale performs as expected in relation to other variables selected as meaningful criteria (criterion variables) (Malhotra, 2004). One form of criterion validity is concurrent validity. While assessing concurrent validity, the data on the scale being evaluated and on the criterion variables are collected at the same time. The present questionnaire is assessed for concurrent validity, by using an approach similar to the one used by Saraph *et al.* (1989). In the current study, Patient Focus and Employee Focus are chosen as the outcomes of TQS implementation in health care. A multiple correlation is carried out among all the constructs and it is seen that all the dimensions have significant positive correlations with the two criteria chosen, namely, patient focus and employee focus (Table III). All the bivariate correlations of the dimensions with the criteria chosen are significant at the 0.01 level. Thus, the concurrent validity, and consequently the criterion validity of the questionnaire, is established.

Unidimensionality. An underlying assumption and essential requirement for creating a summated scale is that the items are unidimensional, meaning that they are strongly associated with each other and represent a single concept. Factor analysis plays a pivotal role in making an empirical assessment of the dimensionality of a set of items by determining the number of factors and the loadings of each variable on the factor(s). The test of unidimensionality is that each summated scale should consist of items loading highly on a single factor. The researcher can assess unidimensionality either with exploratory factor analysis or confirmatory factor analysis (Hair *et al.*, 1998). Exploratory factor analysis (EFA) seeks to uncover the underlying structure of a relatively large set of variables. A general assumption of a researcher is that any

Table III.
Bivariate correlation among provider-perceived dimensions of TQM in hospitals

	TM	HR	PM	HF	PF	EF	MH	HIS	EM	SC	CI	BM	UI	GS
TM	1.00													
HR	0.886**	1.00												
PM	0.859**	0.878**	1.00											
HF	0.751**	0.742**	0.794**	1.00										
PF	*0.783***	*0.771***	*0.846***	*0.809***	1.00									
EF	*0.673***	*0.769***	*0.673***	*0.675***	*0.689***	1.00								
MH	0.769**	0.763**	0.823**	0.744**	*0.815***	*0.706***	1.00							
HIS	0.764**	0.833**	0.854**	0.747**	*0.774***	*0.713***	0.790**	1.00						
EM	0.561**	0.495**	0.572**	0.517**	*0.567***	*0.550***	0.617**	0.490**	1.00					
SC	0.763**	0.739**	0.746**	0.701**	*0.776***	*0.775***	0.777**	0.690**	0.659**	1.00				
CI	0.823**	0.812**	0.817**	0.788**	*0.832***	*0.766***	0.863**	0.740**	0.576**	0.781**	1.00			
BM	0.630**	0.680**	0.723**	0.625**	*0.729***	*0.694***	0.765**	0.728**	0.631**	0.725**	0.715**	1.00		
UI	0.262**	0.353**	0.250*	0.341**	*0.267***	*0.517***	0.359**	0.338**	0.284**	0.347**	0.321**	0.256*	1.00	
GS	0.744**	0.696**	0.773**	0.706**	*0.748***	*0.639***	0.771**	0.666**	0.680**	0.781**	0.741**	0.700**	0.160	1.00

Note: *and **significant at the 0.05 and 0.01 levels, respectively (two tailed)

indicator may be associated with any factor. Hair *et al.* (1998) stated that in many analyses, the researcher has pre-conceived thoughts on the actual structure of the data, based on theoretical support or prior research. In such cases, the researcher requires that confirmatory factor analysis (CFA) be used.

In the present study, since TQM is a widely researched concept with well-established dimensions of TQM, it is preferable to use CFA rather than EFA in order to measure the unidimensionality and goodness of fit of each of the proposed dimensions of TQM in hospitals. Several studies prefer to use CFA over EFA in order to check for unidimensionality (Sureshchandar *et al.*, 2002), because CFA offers a better interpretation of unidimensionality as compared to other methods. For unidimensionality testing, each of the constructs is specified as a separate measurement model and then CFA is calculated for each of the constructs. Byrne (1994) proposed that a comparative fit index (CFI) of 0.90 or above for the model shows no proof of lack of unidimensionality.

In this study, each of the 14 dimensions of provider-perceived TQM in hospitals has been treated as an independent measurement model, and a separate CFA has been run for each of them. It is found that the CFI values for each of the 14 dimensions are 0.90 or above, and hence the scale shows strong unidimensionality. The CFI indices for the 14 dimensions of TQS in health care are shown in Table II. Thus, *H1* has been accepted.

Relationships among the dimensions

In order to explore possible relationships among the proposed dimensions of provider-perceived quality in healthcare, bivariate correlations among the dimensions have been examined. Table III shows the bivariate correlations among the 14 dimensions of TQM in hospitals. All the correlations are positive and significant at the 0.01 level indicating a strong relationship among all the dimensions. This highlights the fact that TQM is a holistic philosophy and that all the dimensions of TQM are relevant in successfully implementing a TQM program in a hospital. This finding has been supported by many researchers through their findings (Sureshchander *et al.*, 2001; Issac *et al.*, 2003). TQM has been found to be an integrated approach with a lot of interdependence among its dimensions. This interdependence is reflected clearly in the bivariate correlation analysis done, and presented in Table III.

It can be seen from Table III that TM is significantly highly correlated with HR, Process Management PM and CI. This finding highlights the importance of the role of the top management in managing human resources effectively in an organization. This is especially critical in a sector like health care, where the number of cases handled per day is very high, and also of a varied nature. This characteristic of the health-care sector makes it important for teamwork among the medical and support staff of a hospital. In order to create an atmosphere of teamwork and cooperation among the hospital employees, it is the responsibility of the top management to reward teamwork among clinical and non-clinical staff. This relationship between the top management and staff in a hospital is reflected in the high bivariate correlations between TM and HR (0.886). It also indicates that the top management has been successful in selection, recruitment of the right personnel for the right job; offers appropriate training for different medical and non-medical staff, and has been able to create an atmosphere of involvement among employees. TM is also significantly highly correlated with PM. PM, which is a crucial dimension in the evaluation of a service, has been the focus of several studies (Leer *et al.*, 1995). Effective process management is critical to the

functioning of any organization. A complex and multi-faceted environment like health care has numerous interdependent processes, which are both clinical and administrative in nature. These processes need to be managed effectively in order to deliver quality medical care to the patients. In this study, the correlation between TM and PM has found to be fairly high at 0.859, indicating that the top management has been effective in hospitals in being able to manage the hospital processes efficiently, and in a patient-friendly manner.

However, in some hospitals surveyed in the present study, it has been noted that although most hospitals largely followed some system of process management, there were a few hospitals that are yet to organize and manage their processes for the benefit of the patient. For example, long queues were noted at the reception of a hospital, and most of the people standing in the queue were confused or unclear about what procedures to follow. Some of the patients stated that they did not know whom to approach for clearing their doubts or queries regarding a clinical procedure. There was an absence, in these hospitals, of a proper mechanism to deal with these problems. Often, the officer in charge of public relations was absent or unavailable to deal with the enquiries in the hospital. However, by and large, efficient process management procedures appear to be in place, thus explaining the high significant correlation between top management commitment and leadership and process management. Of special importance is the high correlation between TM and CI (0.823). This reflects the commitment of the top management towards continuously improving different processes in the hospital and various aspects of clinical care in the hospital.

High correlations are also noted between HR and PM (0.878), HR and HIS (0.833) and HR and CI (0.812). Other high correlations are found between PM and HIS (0.854), PM and CI (0.817), PM and MH (0.823) and PM and PF (0.846). HF is highly correlated with PF (0.809); PF is highly correlated with MH (0.815) and with CI (0.832). MH and CI are highly correlated at 0.863, showing that the philosophy behind a hospital collecting measures of its performance is continuous improvement. The continuous improvement philosophy emphasizes the need to constantly change or improve existing organizational practices to enhance overall performance. The high correlation between MH and CI further reiterates this relationship. The other dimensions of provider perceived TQM are also significantly correlated. This shows that TQM is an integrated approach that incorporates various aspects of hospital functioning. This finding has been in line with the other studies mentioned earlier that highlight the interdependence of TQM practices in different organizations (Ahire *et al.*, 1996). The present study underlines the high correlations between PF and PM (0.846), PF and CI (0.832), PF and MH (0.815), PF and CI (0.832) and PF and HF (0.809). This shows that the patient is the main focus in functioning of core areas such as process management, continuous improvement, measurement of hospital performance and hospital facilities and infrastructure. This is to be expected, and is an encouraging finding, since it reflects the patient-friendly attitude of hospitals covered as part of this study. All the bivariate correlations among the 14 dimensions are significant at the 0.01 level (2-tailed) (except for the one between UI and GS). It is rather unexpected that the correlation between UI and GS is not significant. This is possibly due to the reason that in government hospitals, unions are seen to be following the philosophy of societal responsibility in their functioning, and that in private hospitals, the unions do not seem to play a dominant role in hospital functioning, compared to their counterparts in the government sector.

Influence of provider-perceived TQM on the performance of the hospital

In this section, impact of the 14 provider-perceived dimensions of TQM in healthcare on hospital performance is examined. In order to analyze the impact on hospital performance, the 14 dimensions are taken as predictors and the level of performance of the hospital is considered as the dependent variable. The level of hospital performance is operationalized in terms of seven dependent variables: patient satisfaction with overall quality of healthcare provided by the hospital to the patients over the last 1 year (PTSATIS), satisfaction of doctors with respect to overall hospital functioning (DOCSAT), satisfaction of nurses with respect to overall hospital functioning (NURSESAT), satisfaction of paramedical and support staff with respect to overall hospital functioning (PARASAT), level of overall financial performance of the hospital (FINPERF), level of medico-legal cases against the hospital (MEDILEG), and level of recognition of the hospital in society (RECOG) (all these variables have been rated in the seven-point Likert scale). These performance indicators emerged after an extensive literature review and during the pilot survey among experts in the field of healthcare to identify critical dimensions of hospital performance.

There are several authors who studied the role of the TQM indicators on the performance of the organization. Samson and Terziovski (1999) examined total quality management practices and operational performance of a large number of manufacturing companies and found customer focus to be a strong significant predictor of operational performance. In a similar study, Rahman and Bullock (2005) also found customer focus to be significantly related to organizational performance. Chong and Rundus (2004) and Fuentes-Fuentes *et al.* (2004) highlighted that customer focus is the primary determinant of operational performance. These studies highlighted *customer focus* as a critical indicator of operational performance, and thus for the purpose of the current study, the dependent variable patient satisfaction (PTSATIS) was chosen as an indicator of hospital performance.

Fuentes-Fuentes *et al.* (2004) analyzed TQM according to the degree of implementation of employee participation and employee satisfaction and found TQM to positively influence employee performance. Other studies (Powell, 1995) have also highlighted the role of TQM in enhancing employee performance, and thus, the performance of the hospital has been operationalized in terms of the satisfaction of its employees, i.e. doctors (DOCSAT), nurses (NURSESAT) and paramedical and administrative staff (PARASAT).

Fuentes-Fuentes *et al.* (2004) found financial performance, (measured as the firm's profits and profitability) to be determined by continuous improvement. Raju and Lonial (2002) showed that quality and marketing variables were important determinants of the financial performance of hospitals. Wilson and Collier (2000) established that process management and information analysis had significant and positive direct effects on financial performance. Douglas and Judge (2001) stressed that the extent of TQM implementation was positively and significantly related to both the perceived financial performance and industry expert-rated performance. Thus, based on the relationship between elements of TQM and financial performance, the level of financial performance of the hospital (FINPERF) has been considered as a dependent variable measuring hospital performance.

Keeping in mind the past studies done on TQM and operational and organizational performance, the following are examined in this study:

- impact of the provider-perceived dimensions of TQM in hospitals on the performance of the hospital; and
- identification of the dimensions that have a significant impact on the hospital performance.

The dependent variables of level of medico-legal cases (MEDILEG) against the hospital and the level of recognition of the hospital in society (RECOG) emerged as indicators of hospital performance, during interviews with experts carried out to establish the content validity of the 14 dimensions of TQM in hospitals. To summarize, the performance of the hospital is operationalized in terms of its patient satisfaction with overall quality of care, satisfaction of doctors, nurses and paramedical staff with overall hospital functioning, level of financial performance, level of medico-legal cases and level of recognition and reputation of the hospital in society.

In order to examine the influence of the dimensions of TQM on hospital performance, it is first essential to examine if any multicollinearity exists among the variables under study. Relationship between two variables is called "collinearity", and the relation between variables in the case of more than two variables is termed "multicollinearity". Two variables are said to exhibit complete collinearity if their correlation coefficient is one, and complete lack of collinearity if their correlation coefficient is zero (Hair *et al.*, 1998). Multicollinearity is assessed by computing the "Variance Inflation Factor" or VIF for each construct. Multicollinearity is said to exist if the VIF exceeds 10 (the threshold value), which means that collinearity does not explain more than 10 percent of any independent variable's variance (Hair *et al.*, 1998). It is found (Table IV) that the VIF values of none of the dimensions exceed 10, which means that the level of multicollinearity of the independent variables is not very high.

Multiple regression analyses of the 14 dimensions of provider-perceived TQM in hospitals

Regression analyses has been performed on each of the seven dimensions of hospital performance to identify significant relationships between the dimensions of provider perceived TQM in hospitals and each dimension of hospital performance. Thus, the following hypotheses are proposed:

H2. There exists no significant relationship between the 14 dimensions of provider-perceived TQM in hospitals and patient satisfaction with overall quality of care provided at the hospital.

H3. There exists no significant relationship between the 14 dimensions of provider-perceived TQM in hospitals and degree of satisfaction of doctors with overall hospital functioning.

Table IV.
The variance inflation factors (VIF) for the 14 dimensions of TQM in hospitals

IV	TM	HR	PM	HF	PF	EF	MH	HIS	EM	SC	CI	BM	UI	GS
VIF	7.06	9.16	9.11	5.35	3.51	7.00	6.39	5.46	4.77	1.69	4.23	3.89	2.34	4.70

Notes: IV, Independent variable; VIF, variance inflation factor

H4. There exists no significant relationship between the 14 dimensions of provider-perceived TQM in hospitals and degree of satisfaction of nurses with overall hospital functioning.

H5. There exists no significant relationship between the 14 dimensions of provider-perceived TQM in hospitals and degree of satisfaction of paramedical and administrative staff with overall hospital functioning.

H6. There exists no significant relationship between the 14 dimensions of provider-perceived TQM in hospitals and level of financial performance of the hospital.

H7. There exists no significant relationship between the 14 dimensions of provider-perceived TQM in hospitals and level of medico-legal cases against the hospital.

H8. There exists no significant relationship between the 14 dimensions of provider-perceived TQM in hospitals and level of recognition and reputation of the hospital in comparison with other competitive hospitals.

Table V shows the impact of the 14 dimensions of provider perceived TQM in hospitals and each of the seven dimensions of hospital performance. The overall regression models are found to be significant and the dimensions of TQM in hospitals have emerged as significant predictors of the seven dependent variables of hospital performance.

A multiple regression analysis has been done by considering *each* of the seven dependent variables of hospital performance with *all* the 14 dimensions of provider perceived TQM in hospitals taken as predictors. Table V shows the seven dependent variables and the 14 independent variables. The results of the regression analyses on all the seven dimensions of hospital performance are significant, and thus the null hypotheses *H2-H8* are rejected.

Summary

In the present study, a comprehensive literature review on the different concepts of Total Quality Management in hospitals has been carried out and the dimensions of TQM in hospitals have been identified. The questionnaire has been subjected to a pilot survey, and changes were made as appropriate. This refined questionnaire has been

Independent variables	Dependent variables	R	R^2	Adjusted R^2	F-statistic
(1) TM, (2) HR, (3) PM, (4) HF, (5) PF, (6) EF, (7) MH, (8) HIS, (9) EM, (10) SC, (11) CI, (12) BM, (13) UI, (14) GS	1. PTSATIS	0.804	0.647	0.589	11.138*
	2. DOCSAT	0.752	0.566	0.494	7.912*
	3. NURSESAT	0.745	0.555	0.482	7.586*
	4. PARASAT	0.752	0.566	0.494	7.912*
	5. FINPERF	0.763	0.583	0.514	8.474*
	6. MEDILEG	0.672	0.451	0.361	4.995*
	7. RECOG	0.731	0.534	0.458	6.968*

Note: *Significant at the 0.000 level

Table V.
Results of the regression analyses of the 14 dimensions of TQM and hospital performance

then administered to doctors, nurses, paramedical, administrative and support staff in government and private hospitals in India. Based on the responses to the questionnaire, the unidimensionality, reliability and validity of the questionnaire have been established. Bivariate correlation among the 14 dimensions showed that all 14 dimensions are significantly and positively correlated with each other, thus establishing TQM to be a holistic philosophy which incorporates all the 14 dimensions which have been included in the present study. The influence of provider perceived dimensions of quality in hospitals on hospital performance has been examined by using multiple regression analyses. This instrument can be used by hospital administrators and hospital management to assess the level of quality of different aspects of patient care in the hospital. This instrument could be used in any country, with appropriate modifications, in view of an expanding and increasingly competitive health-care sector in order to assess the various levels of quality of care delivered to the patients.

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Appendix

Instrument on the dimensions of provider-perceived TQM in hospitals

The instrument to measure the provider's perception of quality of care delivered is given below. The instrument contains 107 items corresponding to the 14 dimensions of provider-perceived TQM in hospitals. Respondents include medical, nursing, paramedical, administrative and support staff in a hospital. The instrument is a 7-point Likert scale, where "1" is the lowest possible score that can be given and "7" is the highest possible score. The items have been jumbled and arranged in a random order in the actual instrument. The items corresponding to each of the 14 dimensions are given below:

Top management commitment and leadership

- Commitment of the hospital management to the quality initiative.
- Extent to which the hospital management allocates adequate resources and time for implementation of quality in health care.
- Level to which the hospital management emphasizes on providing the best-quality and cost-effective medical care.
- Degree to which hospital management encourages and involves all doctors, nurses, paramedical and support staff in long-term planning and decision-making with respect to quality improvement.
- Level to which hospital administration helps in simplifying the processes (for example: patient admission and discharge; procurement of drugs and hospital equipments; allocation of operation theatres and beds; and so on) and making them user-friendly.
- Degree to which hospital management ensures that medical, nursing and paramedical staff stick to their commitments (in terms of providing quality health care with ethical standards) to patients.
- Level to which hospital management keeps up its commitment (in terms of providing facilities such as operation theatres, medicines and equipments, career growth and financial rewards) to medical, nursing and paramedical staff.
- Level to which top management clearly indicates what is expected of its medical, nursing, paramedical and administrative staff with respect to providing quality health care.
- Degree to which top management gives rewards and incentives to medical, nursing, paramedical and administrative staff in respect of their quality improvement efforts or initiatives.
- Focus on developing a continuously evolving patient-focused hospital-quality policy with clearly specified quality vision, mission and goals.

Human resource management in the hospital

Selection.

- Level to which selection of new staff/personnel with a positive attitude to providing health care is done.
- Degree to which it is ensured that the right person is placed on the right job (for example, making a doctor undertake the duty in the ward of his/her specialty).
- Importance given to having an adequate number of doctors of appropriate specialties and support staff for an effective hospital functioning.

Training.

- Level to which job training and development, with an emphasis on health-care quality, is periodically given to doctors, nurses, paramedical and administrative staff.
- Degree to which the contents of the training programmes for doctors and other hospital staff are based on the current medical practices.
- Efficiency of an organization-wide training and development process, including career path planning, for all doctors, nurses, paramedical, and administrative staff.
- Effectiveness of training of doctors, nurses, paramedical, and administrative staff in problem-identification and problem-solving skills such as cause and effect analysis, Pareto analysis, brainstorming, quality-control circles and quality management systems such as ISO 9000.

Employee involvement.

- Degree of sincerity and regularity of medical, nursing and paramedical staff.
- Level to which professionals are motivated to develop themselves in their profession.
- Level to which hospital doctors, nurses, paramedical and support staff involve themselves in quality improvement activities.

Process management

- Efficiency of a formal process or system for overall quality management in the hospital.
- Extent to which your hospital applies quality improvement activities on a regular and systematic basis, and integrates them in all spheres of hospital functioning.

Ease of access to the hospital and admission process and procedures.

- Level to which the acceptance of emergency cases is made easy and simple.
- Degree to which the acceptance and management of medico-legal cases is made easy and simple.
- Extent of delay before being seen by the junior doctors/consultants.
- Level of availability of competent doctors and nurses, and clinical facilities such as scans, labs and beds to attend to and manage emergency cases immediately.
- Extent to which the waiting time for patients (before being seen by doctors) is kept minimum in the Out-Patient Department.

Administrative services.

- Availability of competent persons with a background in medical science to manage the patient records.
- Extent of proper maintenance, storage and retrieval of patient and other hospital records.

Processes: administrative and clinical.

- Extent to which a daily examination of each case is done by the attending physician/surgeon.
- Level of effectiveness of the system at the hospital level (such as Case Conference) that monitors and critically examines the medical treatments given to critical or serious patients, or to patients with rare ailments, or to patients who have died.
- Extent to which overall administrative procedures in the hospital (in terms of admission, stay and discharge) are kept short and simple.
- Frequency in delays or cancellation of scheduled surgeries due to reasons such as non-availability of operation theatres or surgeons, or lack of preparation of patients for surgery.

Exit.

- Frequency of discussions (say, with respect to the patients' illness, treatment given, recovery and post-operative patient management) among doctors of different and appropriate specialties.
- Extent to which patients are advised upon discharge on the medical care to be taken after leaving the hospital.

Clinical outcomes of medical care.

- Degree to which the effectiveness of medical treatment given to patients is assessed regularly for improving the quality of treatment.

- Extent to which the correct clinical diagnosis is made in minimal time.
- Level to which patients are continuously apprised of their ailment, details of medical/surgical treatment given and the outcome, including possible complications.

Hospital facilities

- Effective layout and adequacy of different facilities in the hospital (e.g. wards, beds, operation theatres, intensive/post-operative care units, reception lounge, administrative departments, vehicular parking, canteen, toilets, etc.).
- Availability of adequate diagnostic facilities such as labs, and X-ray and CT/ultrasonic scans.
- Extent to which guidance signs, symbols, boards, pamphlets and other artifacts in the hospital are appealing and useful to patients in reaching different wards/places in the hospital.
- Extent of availability of amenities (such as continuous electricity and water supply, housekeeping, sanitation facilities and pharmacy) at comfortable ambient conditions (such as temperature, ventilation, noise and odour) to patients and their attendants.

Patient focus

- Extent to which the quality of health care provided at this hospital is perceived to be good by the patients, in comparison with other competitive hospitals.
- Level of analysis of feedback/complaints from patients as a means to initiate continuous improvement in the hospital.
- Extent to which the cost of health care provided in your hospital is perceived to be reasonable by the patients, in comparison with other competitive hospitals.
- Level of providing right patient services the first time.
- Extent to which patients are convinced and counseled, and are cared for their well-being by doctors and support staff in the hospital.
- Efficiency in functioning of a grievance redressal system for patients in the hospital.

Employee focus

- Level of functioning of a mechanism to measure the satisfaction of all hospital staff with respect to their salary, perks and other financial incentives to reinforce their job performance.
- Level of functioning of a mechanism for systematic and regular measurement of health-care quality awareness of doctors, nurses, paramedical staff and other employees, is made.
- Extent to which a regular and systematic feedback is given to all hospital staff, including doctors, regarding their performance on the job.
- Extent to which it is ensured that hospital personnel spend their time on the job of their specialization and not on other work (for example, nurses being used for administrative purpose).
- Degree to which the interests of doctors, nurses, paramedical and administrative staff are considered, while evolving the long term and short term plans of the hospital.
- Efficiency in functioning of a grievance redressal system for all hospital staff.

Measurement of hospital performance

- Extent to which the hospital management collects, analyses and makes use of the statistics related to hospitalization deaths or treatment failures per year with the aim of improving the performance of the hospital.
- Degree to which the hospital management collects and makes use of statistics related to patient admissions and discharges, surgeries done, medical cases handled, and bed occupancy rates per year with the aim of improving the overall performance of the hospital.
- Level to which hospital management analyses financial statistics related to hospital functioning.
- Level to which the hospital's recognition and reputation in the society are assessed periodically.

Hospital information system

- Extent to which research results and current techniques such as telemedicine and evidence-based medicine are used for patient treatment.
- Effectiveness of the functioning of Hospital Information System, in terms of user-friendly data feeding process, analysis of data and good report generation.
- Efficiency of Information and Computer System Staff in ensuring the proper functioning of computers and Hospital Information System.
- Extent to which systematic feedback is given to doctors, nurses and hospital staff about quality improvement processes and their outcomes.
- Degree to which the Patient Information System is operational and efficient, in terms of having relevant patient records over years.

Error, safety and risk management

- Extent to which the hospital management and doctors are willing to be accountable for possible lapses in the treatment given to patients.
- Level of willingness of doctors to learn from mistakes.
- Effectiveness of the use of proactive measures by hospital management to prevent errors in diagnosis, operations and treatment.
- Emphasis laid on monitoring and adhering to rules and regulations laid down by Government regarding hospital functioning.

Service culture

- Extent of overall health care and concern shown by the hospital management in respect of its patients.
- Effectiveness of overall health care and concern shown by the hospital management in respect of its hospital staff.
- Extent to which the doctors and hospital staff at all levels realize that the core purpose of their presence in the hospital is "Service to Patients".
- Degree to which the functioning and administrative structure of the hospital facilitate prompt and good decision-making and response to patients' requirements.

Continuous improvement

- Level of emphasis laid on continuously improving hospital facilities such as operation theatres, laboratories, equipments and wards.
- Extent to which senior hospital management encourages and rewards ideas aimed at improving the quality of medical care provided in your hospital.
- Effectiveness of continuous improvement in hospital functioning (both long-term and short-term operations) among hospital personnel at different levels.
- Assessment of continuous health-care quality improvement strategies on the basis of factors such as cost of health care, time and overall hospital performance.
- Extent to which the hospital management continuously improves its health care and administrative processes to achieve better overall performance of the hospital.

Benchmarking

- Emphasis on benchmarking the processes related to patients (in terms of admission, stay and discharge) with those of other hospitals.
- Emphasis on benchmarking the administrative processes (related to doctors, nurses and paramedical staff) of this hospital with respect to those of other hospitals.
- Importance given to benchmarking the training and development programmes for doctors, nurses and paramedical staff with those of other hospitals.
- Emphasis on benchmarking the level of patient medical care and treatment with those of other hospitals.
- Importance given to benchmarking the effectiveness of managing doctors, nurses and paramedical staff with that of other hospitals.
- Emphasis on benchmarking the quality and adequacy of medical and surgical equipment, and physical facilities (such as operation theatres, beds and wards) with that of other hospitals.
- Emphasis on benchmarking the level of commitment of the hospital to the society in terms of providing cost-effective and quality health care, with that of other hospitals.
- Extent of benchmarking the proficiency of doctors and nurses with that of other hospitals.
- Extent to which your hospital benchmarks your professional ethical practices with those of other hospitals.

Union influence

- Cooperation and support of the Employee Union to the drive by the hospital management for improved patient focus and health-care quality in the hospital.
- Cooperation and support of the Doctor's Union to the drive by the hospital management for improved patient focus and health-care quality in the hospital.
- Extent to which recruitment, selection, and the career development policies and programmes for doctors, nurses, paramedical and support staff are influenced by the Doctor's Union.
- Extent to which recruitment, selection, and the career development policies and programmes for doctors, nurses, paramedical and support staff are influenced by the Employee Union.

- Extent of influence of Employee Union on the functioning of the hospital.
- Level of influence of Doctor's Union on the functioning of the hospital.
- Congruence between management, union and all hospital staff with the belief that their functions are complementary and not contradictory, towards improving the hospital performance and quality health care.
- Degree to which the hospital regularly apprises the Employee Union and hospital staff, including doctors, about the quality initiatives and their outcomes.

Governance and social responsibility

- Degree of monitoring of doctors by the hospital management with respect to adherence to medical ethics.
- Extent to which hospitalization expenses are commensurate with the patient's economic background.
- Level of medico-legal cases per year due to hospital's negligence or inadequate medical care rendered.
- Level of hospital concern regarding the impact on environment and society such as disposal of hospital wastes, maintenance of hygiene inside the hospital and in the surrounding.
- Adequacy of disciplinary action against erring doctors, nurses and paramedical staff.
- Contribution of your hospital to the overall health of your community by organizing health programmes, immunization programmes, etc.
- Extent to which patient privacy and confidentiality are assured.

Level of performance of the hospital

- Extent of patient satisfaction with overall quality of health care provided in your hospital.
- Degree of satisfaction of doctors with overall hospital functioning.
- Extent of satisfaction of nurses with overall hospital functioning.
- Degree of satisfaction of paramedical and administrative staff with overall hospital functioning.
- Level of financial performance of the hospital.
- Level of medico-legal cases against the hospital.
- Level of recognition and reputation of the hospital in comparison to other competitive hospitals.

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