



# The quality of health care and patient satisfaction

## An exploratory investigation of the 5Qs model at some Egyptian and Jordanian medical clinics

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### Abstract

**Purpose** – To examine the major factors affecting patients' perception of cumulative satisfaction and to address the question whether patients in Egypt and Jordan evaluate quality of health care similarly or differently.

**Design/methodology/approach** – A conceptual model including behavioural dimensions of patient-physician relationships and patient satisfaction has been developed. As the empirical research setting, this study concerns three hospitals in Egypt and Jordan. The survey instrument in a questionnaire form was designed to achieve the research objectives. A total of 48 items (attributes) of the newly developed five quality dimensions were identified to be the most relevant. A total of 224 complete and usable questionnaires were received from the in-patients.

**Findings** – Hospital C has above-average total and dimensional qualities and patients are the most satisfied in accordance with all dimensions of services. Hospitals A and B have under-average total qualities as the majority of patients are not satisfied with services. Comparing hospitals A and B, in the majority of dimensions (with the exception of Q5), the quality in hospital B is higher than in hospital A. Patients' satisfaction with different service quality dimensions is correlated with their willingness to recommend the hospital to others. A cure to improve the quality for health-care services can be an application of total relationship management and the 5Qs model together with customer orientation strategy.

**Practical implications** – The result can be used by the hospitals to reengineer and redesign creatively their quality management processes and the future direction of their more effective health-care quality strategies.

**Originality/value** – In this research a study is described involving a new instrument and a new method which assure a reasonable level of relevance, validity and reliability, while being explicitly change-oriented. This study argues that a patient's satisfaction is a cumulative construct, summing satisfaction with five different qualities (5Qs) of the hospital: quality of object, processes, infrastructure, interaction, and atmosphere.

**Keywords** Health and medicine, Medical practice, Customer satisfaction, Quality management, Egypt, Jordan

**Paper type** Research paper



## Introduction

The health care industry has to cope with environmental pressures such as demographic changes and ageing of populations as well as emergence of new treatments and technologies and increased insistence on greater quality of service in order to remain competitive (Ingram and Desombre, 1999; Andaleeb, 1998). Not surprisingly, service quality and the closely related customer satisfaction constructs are of vital concern for health care organizations.

Good quality of care is considered to be the right of all patients and the responsibility of all staff within the hospital. Health care providers in developing countries are beginning to adopt some or all of the main three components of quality assurance which are quality design, quality control and quality improvement (Koeck, 1997; Pickering, 1991).

In the face of uncertainties, healthcare organisations have to be reprogrammed and renewed, repositioning themselves for the future (Lim and Tang, 2000). In particular, healthcare system in Egypt and Jordan is currently facing considerable challenges. Although Egypt and Jordan did achieve some substantial reductions in child mortality during the 1980s, its overall health performance was and remains poor in comparison with other countries at its income level (Rannan-Eliya *et al.*, 1997). Faced with the necessity to improve healthcare service quality, both governmental, non-governmental and private organizations are undertaking reforms and programmes in order to improve the health standard. Systematic methods of quality assurance in health care are still evolving in both developed and developing countries.

Competitiveness among health care organizations also depends upon patients' satisfaction. Patients' satisfaction is created through a combination of responsiveness to the patient's views and needs, and continuous improvement of the healthcare services, as well as continuous improvement of the overall doctor-patients relationship. Determining the factors associated with patient's satisfaction is important topic for the health care provider to understand what is valued by patients, how the quality of care is perceived by the patients and to know where, when and how service change and improvement can be made.

Most of the published academic studies in the services sector have looked only at the link between services quality and satisfaction (e.g. Kelley and Davis, 1994; Parasuraman *et al.*, 1994; Bettencourt, 1997; Zineldin, 2000a). Few studies have been conducted to investigate the link between technical and functional quality dimensions and the level of patient's satisfaction in the healthcare sector. None of the identified studies have empirically examined how the atmosphere, interaction and infrastructure might impact the overall patient's quality perception and satisfaction.

We argue in this study that a patient's satisfaction is a cumulative construct, summing satisfaction with various facets of the hospital, such as technical, functional, infrastructure, interaction and atmosphere variables or items. This cumulative satisfaction is distinguished from transaction-specific customer satisfaction, which is an immediate post purchase evaluative judgment to the most recent transactional experience with the firm (Oliver, 1993). We also argue that, there may exist situations where the patient is forced to be treated at a specific hospital by a specific healthcare staff, even though she/he is not satisfied. Grønhaug and Gilly (1991), for example, argue that dissatisfied customers (patients in our case) may remain loyal because of high switching costs. We additionally state that it is not enough to measure a patient's

satisfaction. Patient's satisfaction should be defined in relation to some specific goals. In this research we describe a study involving a new instrument and a new method that assures a reasonable level of relevance, validity and reliability, while being explicitly change oriented.

This research attempt to contribute to the previous academic studies and knowledge in quality management in healthcare sector by at least three ways. First, we develop a conceptual model including behavioral dimensions of patient-physician relationships and patient satisfaction. Second, we empirically segment the hospitals into three groups to the extent to which each group evaluate the different constructs of satisfaction. Third, we empirically examine the major factors affecting the perception of the cumulative satisfaction to address the question whether patients in Egypt and Jordan evaluate quality of health care similarly or differently. The result can be used by the hospitals to reengineer and redesign creatively their quality management processes and the future direction of their more effective healthcare quality strategies.

### **Background: health care in Egypt and Jordan**

Approximately 3.7 per cent of Egyptian GDP was spent on healthcare in 1994. Per capita spending was US\$38. This level of spending is on the lower side in comparison to most developing countries, and especially taking Egypt's income level one might expect it to be higher (Rannan-Eliya *et al.*, 1997). In USA the expenditure on health care was 9 per cent in 1995. In some developing countries an average of \$6-\$12 per person/year, is spent by the government on health care. In Egypt, the average is much higher, i.e. \$40 but the health care quality still falling behind many other countries.

In terms of sources of healthcare financing in Egypt, in 1994 public financing and donor support accounted for 44 per cent of all funding for the health system. The rest consisted of private funding, of which 5 per cent was from firms, private insurance, syndicates and other private sources, and 51 per cent from households. Health care system in Egypt is in the process of making a transition from a government-run system to a market-based system. The government of Egypt, together with non-governmental and private organizations, is undertaking reforms and programmes for the improvement in the quality of health care sector.

In 1991, the USAID has supported the Egypt's Gold Star programme. The programme was one of the largest public-sector quality assurance programmes for family planning worldwide. Its main objective was not only to upgrade the quality of family planning services but also to create new expectations for quality to enable the public will request better services. In August 1997, after a substantial number of units had qualified for the Gold Star, the Gold Star emblem moved to the forefront of the campaign, both as a symbol of good services and as a means to locate those services (Brancich, 1998; Egypt Ministry of Health, 1994).

In January 1994 the Ministry of Health and Population (MOHP) Systems Development Project (SDP) launched a nationwide quality assurance programme for family planning services in the public sector. In 1998, the project had provided more than 3,800 MOHP clinics with basic equipment and renovations, trained 7,710 physicians and 14,814 nurses, implemented national Clinical Standards of Practice in all units, and installed a management and supervision system to regularly monitor all units for a considerable number of indicators of good-quality service (Brancich, 1998; Egypt Ministry of Health, 1994).

In 1998, Jordan spent approximately US\$647 million on health, or US\$136 per capita. Total health expenditures represented 9.12 per cent of GDP. The private sector is the largest source of health funding (47 per cent) followed by the public sector (45 per cent) and donors (8 per cent). The main policy issues emerging from the NHA results are the high level of total health expenditures as a percentage of GDP and its implications for the ability to provide health care services at current level of quality and quantity; the high level of pharmaceutical expenditures (35 per cent of total health expenditures); the indiscriminate capital investment in the private sector and little regulation that has resulted in a surge of private hospitals; and the high level of spending on curative care (58 per cent) as compared to primary care (27 per cent). The Jordan NHA team is working to institutionalize NHA at the national level.

Jordan's health system is a complex amalgam of several highly fragmented private and public programmes. Two major public programmes that finance as well as deliver care are the Ministry of Health (MOH) and Royal Medical Services (RMS). Under the jurisdiction of the MOH, the health centers are being technically and physically upgraded by the USAID-funded Primary Health Care Initiatives (PHCI) project. PHCI, initiated in 1999, is a five-year project (1999-2004) designed to increase the quality of and access to public sector primary health care and reproductive health services in Jordan. The ultimate objective is to improve the competency of the staff and the care and satisfaction of clients. In 2004, some of the recommendations of the project are to continue to evaluate and respond to client feedback and to explore client health needs ([www.initiativesinc.com/docs/jordan/phci\\_bp.pdf](http://www.initiativesinc.com/docs/jordan/phci_bp.pdf)).

### **Health-care services in developing countries: why there is a need to improve the quality?**

Still, there is a need to find a way to achieve better health care quality that is appropriate. It is important to start with an understanding of the real situation. Some common features of the health care challenges in many developing countries according to Øvretveit (2004) are:

- a low level of basic primary and hospital care, with few preventative services;
- lack of transport and resources for supervision;
- the low use of these services by the public, due to poor treatment and high user charges for many items;
- an increasing use of private care: private hospitals and clinics in some cities, pharmacies and individual doctors and other practitioners working privately, with no effective regulation;
- lack of knowledge about quality ideas, methods and results. Lack of skills in using the methods or in implementing programmes;
- lack of standards which are credible, agreed, and authorized by the ministry and professions, and which can be applied flexibly in different situations;
- many personnel are low paid and de-motivated and see no personal or other advantages to spending extra time working on quality improvements: the benefits for them are not clear;
- a history of a centralized system of administration, with the health ministry allowing little discretion for regions, districts and facilities, and few financial

incentives to improve quality (and in some countries, financing under the control of the ministry of finance);

- a low level of training and professionalism for most health practitioners, who are not supervised, are low-paid and rely on patient fees and other sources of private income; and
- the lack of management training and a culture with a power structure which would be threatened by lower levels making changes and taking more control of their services, or by the establishment of a strong line management structure and process.

The World Health Organization (WHO) and USAID have led and supported the growing interest in healthcare quality. They have supported projects addressing every aspect of quality, including management, service delivery, training, and technical guidance (WHO, 1993). Through the collaboration of many organizations including USAID's Cooperating Agencies – private and non-profit organizations that offer technical assistance and funding to developing-country programmes with USAID support – the MAQ Initiative is helping spread awareness of health care quality issues and is disseminating materials and methods to help health care providers assure good quality (Shelton and Davis, 1996).

Many quality methods used in the west are not appropriate in this situation. There is a need to find a “way to quality” which is appropriate. Several studies show that most people in developing countries are not satisfied with the quality of public and private care and feel that something should be done. The following are according to Øvretveit (2004) reasons for improving quality in the developing countries.

#### *Patient dissatisfaction*

Dissatisfaction with higher costs (particularly concerning private care), patients are paying more for their care but are finding services do not treat them well or give them what they need. The public services are of very low quality in all care aspects. As a result, the health of many people is getting worse and they are increasingly dissatisfied with governments that they hold responsible for the state of health services.

#### *Professionals' income*

Health staff's income is low. Health workers may find that giving higher quality care takes longer at first, but their income will not suffer in the long term if it is related to the number of patients treated.

#### *Managers*

Managers have many demands on them and feel they have little control over health care staff (mainly the physicians). Quality methods give managers ways to solve problems, influence what health staff do, and improve their relations with them. The methods give ways to reduce waste and save money. If health workers and managers improve quality, fewer people will die, more people will use the service, they will be more satisfied, and incomes will increase, if it is related to the number of patients treated.

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### *Over-use of treatments*

Unnecessary drugs, surgery (e.g. hysterectomy) or laboratory or radiological investigations wastes resources and harms patients.

### *Humanitarian principles*

Both patients and professionals feel that patients should be protected from harm and treated with more respect and dignity, and that professional's working environment should be better.

### *National pride and economics*

People feel they are falling behind other countries. That their nation is failing to provide its people with the type of healthcare which is necessary for economic growth and for a future for the country.

There are now widespread agreements and programmes that an objective of health care reforms should be to improve quality. However, there is less agreement about how to reach this objective.

## **Patients' satisfaction and health care quality**

### *Origins of the quality movement*

Standards governing who could practice medicine date back to the first century AD in Egypt and in parts of India and China. In Europe efforts to license medical practitioners developed as early as 1140 in Italy and evolved into uniform educational standards, state examinations, and licensing in the nineteenth century (McGrew, 1985). In the USA the modern quality assurance movement in health care began in 1917, when the American College of Surgeons compiled the first set of minimum standards for US hospitals to find and eliminate poor care (Blumenfeld, 1993). This approach evolved into an accreditation process now managed by the Joint Commission on the Accreditation of Healthcare Organizations (Blumenfeld, 1993; De Geyndt, 1995).

Today's quality movement in health care draws on disparate roots in medicine and other industries. Medicine historically has taken a watchdog approach, relying on government licensing, professional credentials, internal audits, and, more recently, external inspections to maintain standards, solve problems and quality management. Other industries have adopted a different philosophy over the past 50 years: training employees to prevent problems, strengthening organizational systems, continually improving performance, and patient safety and satisfaction (Berwick, 1989). In the 1980s health care began adopting these approaches as well.

In the 1980s weaknesses in the inspection process, the persistence of poor quality, and the emergence of new management techniques in industry, together with rising costs, led health care professionals in developed countries to begin reassessing accreditation and standards-based quality assurance (Morgan and Murgatroyd, 1994; Roberts *et al.*, 1990). US health care organizations began testing the industrial philosophies of continuous quality improvement (CQI) and total quality management (TQM) (Blumenfeld, 1993; Koeck, 1997). At the same time, the hospital accreditation system expanded its focus from inspections to promoting quality improvement (Roberts *et al.*, 1990). Zineldin (1998, 2000a, 2000b, 2004) argues that total relationship management (TRM) highlights the role of quality and customers/patients service, the impact of the external environment on business rules and performance, on



relationships and networks, on communications and interactions with different actors, other collaborators and employees in different departments/functions. In the UK the National Health Service adopted a formal quality policy in 1991 and recognized CQI as the most cost-effective way to implement it (Morgan and Murgatroyd, 1994).

*What is quality?*

Quality is considered a critical determinant of firm competitiveness and long-term profitability of both service and manufacturing organizations. It is a complicated and indistinct concept (Grönroos, 2000) and there is no single universal definition of quality in the literature. A simple definition of quality health care is the art of doing the right thing, at the right time, in the right way, for the right person – and having the best possible results.

Recently, among health care researchers the greatest consensus has been achieved on the definition provided by Institute of Medicine (IOM):

... the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge (McGlynn, 1995).

Fortunately, there are scientific ways to measure health care quality. These tools, called measures, have mostly been used by health professionals. They use measures to check on and improve the quality of care they provide. There are two main types of quality measures that can help you choose quality health care: consumer ratings and clinical performance measures. Consumer ratings, or “consumer satisfaction” information look at health care from the consumer’s point of view. For example, do doctors in the plan communicate well? Do members get the health services they need? Clinical performance measures, sometimes also called “technical quality” measures, look at how well a health care organization prevents and treat illness. One of the main goal of the quality measures is to provide the health care provider with information to assure the health care quality.

Although we would like to think that every health plan, doctor, hospital, and other provider gives high-quality care, this is not always so. Quality varies, for many reasons.

*Quality assurance*

Assuring the good quality of health care services is an ethical obligation of health care providers. Research is showing that good quality also offers practical benefits to patients. Good-quality care makes, for example, contraception safer and more effective. Poorly delivered services can cause infections, injuries, and even death. Poor services, in family planning clients and programmes also can lead to incorrect, inconsistent, or discontinued contraceptive use and thus to unwanted pregnancies. Interviews with clients in Chile, for example, found that good-quality clinical services reduced clients’ fears, increased their confidence in the care received, and generated loyalty to the clinic (Vera, 1993). In contrast, poor care can discourage women from seeking family planning or prompt clients to discontinue using family planning. Patients are more likely to feel safely the medical and health care provider is friendly, if they were satisfied with services, and if they had been told about the advantages and side effects of several treatment methods. Many studies have found that poor medical care or if even the providers treat patients rudely dissatisfies patients, discourages them from

seeking care and returning for services, and prompts them to switch physicians (Hall *et al.*, 1993; Lo *et al.*, 1994).

Even health care staff members derive greater personal and professional satisfaction from their jobs when they can offer good-quality care and can feel their work is valuable. Some studies argue that the most satisfying aspect of physicians jobs was helping people and the community recognition they received for it.

### *CQI, TQM and TRM*

Definitions of CQI, TQM and TRM vary. While CQI focuses on industrial methods and TQM, on management philosophy, TRM focuses on both, the terms often are used interchangeably because of their shared assumptions (Zineldin, 2000b; Kazandjian, 1997). CQI, TQM and TRM are based on the work of pioneers in industrial management and marketing such as W. Edwards Deming, Joseph Juran, Armand Fiegenbaum, Kaoru Ishikawa and Zineldin. These people helped transform Japan's industrial sector by applying management tools and methods to management of production processes, by making client satisfaction the focus of all operations, and by empowering employees through teamwork and shared decision making. CQI, TQM and TRM theories and methods have been adopted by many different types of organizations worldwide, including health care and government organizations (Brown *et al.*, 1995; Calla, 1991; Zineldin, 2000b). TRM focuses on "totality" of the internal and external functions, qualities and relationships (Zineldin, 2000b). As we will see later in this paper, TRM includes five different quality dimensions, i.e. quality of object, processes, interaction, infrastructure and atmosphere.

Still, health care differs from consumer product industries in two important ways: First, most clients lack the knowledge to judge technical quality in health care; second, a patient's physical well-being and sometimes very life, not just satisfaction and loyalty, may depend on the quality of services. Therefore, conventional quality control methods, such as licensing, standard setting, and accreditation, remain uniquely important in health care to eliminate substandard care and protect patients. On the other hand, organizations that focus on quality rely on the same basic TRM principles for success, no matter what kind of product or service they provide (Melum and Sinioris, 1993; Zineldin, 2000b; Morgan and Murgatroyd, 1994).

Finally, TRM is an unforgiving and very demanding process. One weak link and the whole effort can be wasted. Thus, making a quality product demands a lot of cooperation and coordination through the value chain of activities within an organization to produce value for customers. If the customer can be integrated into the product development process, through cooperation and collaboration in real time, an intense relationship can begin.

### *Overall satisfaction and patient-oriented health-care system*

Patient satisfaction theory has argued that patient satisfaction is an attitude which should be measured by the totalling of the subjective assessments of multidimensional attributes associated with the care experience (Linder-Pelz, 1982). Patient satisfaction is defined by Bernma (1995) as the appraisal of the extent to which the care provided has met an individual's (patient's) expectations and preferences. According to the physiological theories, patients' evaluations of different situations are moderated by



personal feelings of equity in the exchange, disconfirmation between desires and outcomes, individual preferences, and social comparisons (Alford, 1998; Klein, 1997).

Satisfaction is an emotional response to the difference between what customers expect and what they ultimately receive. Satisfaction, according to Liljander and Strandvik (1994), refers to an insider perspective, the customer's/patient's own experiences of a service where the outcome has been evaluated in terms of what value was received. It can also be defined as patients' cognitive and affective evaluation based on the personal experience across all service episodes within the relationship.

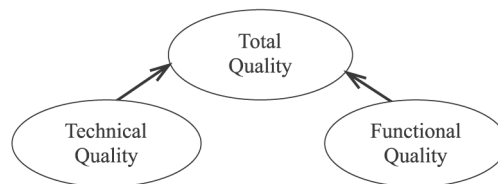
In large amount of literature, satisfaction is viewed as a state. Oliver (1993) proposes a framework that visualizes satisfaction as a state of fulfilment related to two dimensions: reinforcement and arousal. "Satisfaction-as-contentment" describes low arousal satisfaction. On the other hand, high arousal satisfaction is defined as "satisfaction-as-surprise", which can be both positive (delight) or negative (shock). "Satisfaction-as-pleasure" appears when positive reinforcement occurs. And finally "satisfaction-as-relief" results from negative reinforcement. In parallel, satisfaction is described in the literature as a process.

Many health care organizations, like many private businesses, historically have seen Patients as passive recipients of services or products (Morgan and Murgatroyd, 1994). As the experts, senior managers have thought of themselves as at the top of their organization's hierarchy, while customers/patients were at the bottom. In contrast, patient-oriented organizations elevate patients to the top position.

In patient-oriented health care, patients and their satisfaction are considered first and foremost at every point in the planning, implementation, and evaluation of service delivery (Edmunds *et al.*, 1987). Patients are the experts on their own personal circumstances and wants (Morgan and Murgatroyd, 1994). Patient preferences should guide every aspect of service delivery, from clinic hours to counselling techniques to contraceptive decision-making. Patients satisfaction is created through a combination of responsiveness to the patient's views and needs, and continuous improvement of the healthcare services, as well as continuous improvement of the overall doctor-patients relationship.

#### *Quality models*

In the literature service quality is commonly attributed with two dimensions: technical quality and functional quality (Grönroos, 2000). Technical quality refers to the quality of the service product, i.e. what a customer buys and whether the service fulfils its technical specifications and standards, while functional quality describes the way in which the service product is delivered and how is the relationship between the company and its customers. Figure 1 visualizes how total quality can be broken into technical and functional quality.



**Figure 1.**  
Two dimensions of total quality

Service quality is a multidimensional concept and in order to operationalize it many variables have to be considered. SERVQUAL is a widely used scale to measure different quality dimensions. Originally, as developed by Parasuraman *et al.* (1985), scale consisted ten dimensions used by customer to judge company's service, which were reduced into five major dimensions (Berry *et al.*, 1992): tangibles, reliability, responsiveness: assurance and empathy.

The SERVQUAL constructs impact are used to measure service quality and to identify service quality gaps but not their root causes for which other approaches are needed (Wisniewski and Wisniewski, 2005). Some efforts have been invested to improve the methods. In this research we describe a study involving a new instrument and a new method that assures a reasonable level of relevance, validity and reliability, while being explicitly change oriented.

#### *A 5Qs model*

It is people, not accounting systems, computer terminals or trading agreements, who can interact or communicate effectively with each other in order to exchange values. Mohr and Nevin (1990), for example, argue that the role of interaction and communication as a moderator between structure/behavioral conditions and outcomes (e.g. satisfaction and commitment levels) has been largely ignored by researchers. There is a significant relationship between satisfaction with outcomes and commitment to a relationship (Ganesan, 1994) between a service provider and a customer. Therefore, perceived quality of interaction and communication reflects a patient's level of overall satisfaction.

The interaction process between the provider and receiver of a service is influenced by the atmosphere in a specific environment where they co-operate and operate (Ford *et al.*, 1998; Zineldin, 2000a, 2004; Robicheaux and El-Ansary, 1975). This is applicable in a hospital, medical centre or private medical clinic atmosphere where the patient, physicians, nurses and other health care staff are operating. In turn, the atmosphere is influenced by the characteristics of the partners involved and the nature of the interaction itself. The atmosphere can affect the perceived service quality by improving it or by making it worse.

Zineldin (2000a) expanded technical-functional and SERVQUAL quality models into framework of five quality dimensions (5Qs):

- Q1. *Quality of object* – the technical quality (what customer receives). It measures the treatment it self; the main reason of why a patient is visiting a hospital.
- Q2. *Quality of processes* – the functional quality (how the health care provider provides the core service (the technical). It measures how well health care activities are being implemented. Examples include waiting times and speed of performing the health care activities. Process indicators should receive more attention in health care industry. They can be used to pinpoint problems in service delivery and to suggest specific solutions. Front-line nurses/physicians/managers can use process indicators to monitor activity at their facilities and to guide day-to-day decision-making.
- Q3. *Quality of infrastructure*. Measures the basic resources which are needed to perform the health care services: the quality of the internal competence and skills, experience, know-how, technology, internal relationships, motivation,

attitudes, internal resources and activities, and how these activities are managed, co-operated and co-ordinated.

Q4. *Quality of interaction.* Q4 measures the quality of information exchange (e.g. the percentage of patients who are informed when to return for a check-up, amount of time spent by physicians or nurses to understand the patient's needs, etc), financial exchange and social exchange, etc.

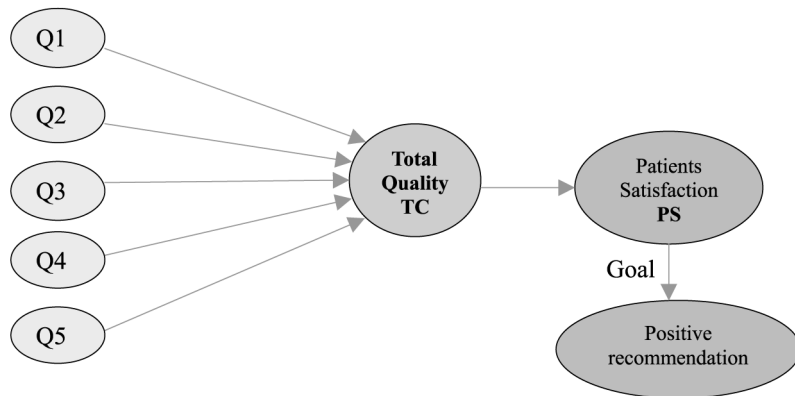
Q5. *Quality of atmosphere.* The relationship and interaction process between the parties are influenced by the quality of the atmosphere in a specific environment where they cooperate and operate. The atmosphere indicators should be considered very critical and important because of the belief that lack of frankly and friendly atmosphere explains poor quality of care in developing countries.

Although there are some common factors between the SERVQAL and the 5Qs model, the 5Qs model is more comprehensive and incorporates essential and multidimensional attributes which are missing in the SERVQAL model. Such attributes are the infrastructure, atmosphere and the interaction between the patients and the health care staff.

A comprehensive model should also include a component on goals, with questions directed at what patient satisfaction should ultimately lead to, e.g. increased trust, increased likelihood for positive recommendations, etc. A such component assures better validity of the model and the measurement method, since patient satisfaction is, as strongly as possible, related to the goals (Eckerlund *et al.*, 1997).

Figure 2 illustrates the 5Qs model and its constructs that was used in the project, where the total quality (TQ) of the health care is function of Q1-Q5. The TQ is a  $f(Q1 + Q2 + Q3 + Q4 + Q5)$ .

The model consists of three integrated components. One component measures the level of patient satisfaction (PS). Patient-perceived quality levels of various quality dimensions (the 5Qs) are also measured, which are assumed to explain the variation in patient satisfaction. Each quality dimension is represented in the patient questionnaire by a number of statements/items, intended to represent a specific quality factor as



**Figure 2.**  
Zineldin's 5Qs: a multidimensional model of health care attributes and patients satisfaction

thoroughly and reliably as possible. The questions/statements should be specific enough to provide an operative decision-making basis for quality improvement.

It is not enough to measure patient satisfaction. Patient satisfaction should be defined in relation to some specific goals. Measurement models and measurement methods confirm the relationship between patient satisfaction and the goal variables (Eckerlund *et al.*, 1997). Thus, the third component in our model is goals where we utilize the positive recommendations as the goal (whether a patient would recommend the hospital to an acquaintance with sight problems who is seeking care. Finally, each single quality dimension is impacting the level of satisfaction which in turn impacting the ultimate goal.

By using a TRM philosophy which includes the 5Qs (Zineldin, 2000b) and viewing an organization as a collection of interdependent systems and processes, managers can understand how problems occur and can strengthen the organization as a whole.

To assess the quality of services, managers first must translate their quality objectives into measurable indicators of the performance of individual staff members and of an entire system (Diprete Brown *et al.*, 1993; Huber, 1997). A comprehensive quality control system uses different types of indicators, each measuring a different aspect of quality and providing complementary information (Donabedian, 1988; McGlynn, 1995). There are many ways to conceptualize and define indicators. We will in this exploratory study use the 5Qs indicators to measure the patient's satisfaction. Devising good indicators of quality is difficult. Indicators must provide reliable, objective, and relevant information about important issues; they must be sensitive to changes in performance; and they must be easy to calculate with available data.

Object and process measures indicate whether health care activities have an impact on their patient health or the general population. Of course, these indicators may be influenced by external factors such as the social and economic characteristics of the clientele. By linking infrastructure, interaction and atmosphere indicators to the quality of object and processes, however, researchers and health care managers can document which changes in services improve the overall satisfaction the health status of the patients, hence the ultimate outcomes.

In practice, however, there are several items/statements combined to each of the 5Q quality factors and several quality factors. The effect on PS is measured for each quality factor in a simultaneous estimation process. This information can then be combined with the relevant average ratings and presented in a simple matrix or to identify the factors which should be prioritized to achieve greater patient satisfaction, i.e. prioritizing improvements in quality factors that have lower rating.

The model is now complete, providing a method for determining the changes that would most efficiently increase the value of the goal variables.

### Methodology

The study was conducted as a part of a wider project funding EU Commission/Tempus to improve and develop the quality of healthcare sector in Egypt, Jordan and Morocco using the skills and know how of the European Union's university staff and know how.

As the research setting, this study concerns only one public Hospital (A), two semi-public Hospitals (B) in two different cities in Egypt; and one relatively new, modern and private hospital (C) in Jordan (C). A total of 224 complete and usable

questionnaires were received from the inpatients (120 from hospital A, 60 from Hospitals B and 44 from Hospital C. The responses were deemed adequate for analysis.

### *The survey/questionnaire*

From the literature review discussed above interviews, a draft questionnaire was constructed and tested by some inpatients and other researchers. Respondents were encouraged to identify unclear items, comment on the importance of the research issues, if the respondents could/would complete the questionnaire in the absence of a researcher, and suggest changes. No major problems were presented, and after making the required modifications, the final draft of the questionnaire was developed.

The survey instrument was designed to achieve the research objectives. A list of 60 quality items impacting the patient satisfaction were compiled for the respondents to analyze. This list was developed in a multi-step process. First, a large list of items was compiled based on an extensive literature review. Next, the lists were reviewed by a panel of patients, physicians, nurses and senior level managers from different hospitals, private medical clinics and academic researchers. A Delphi analysis was then conducted to review the list, and then delete, combine or add items to the list. Two rounds of suggestions were incorporated until the 48 items were created. A total of 48 items (attributes) of the five quality dimensions were identified to be the most relevant. The 48 attributes or statements are designed to fit into the five dimensions of the total quality. The introductory letter explained the purpose to the research, assured the anonymity of their replies. The Appendix shows some example of the measurements.

### *Scales*

Scales consisting of multiple items were developed to measure each construct. To the extent possible we draw upon scales that had been used in management, medical, physiological and management literature to further the process of validation for established scales. Most scales identified were not complete or not applicable to our study, though. We, therefore, had to develop new, or adjust present, scales to perfectly suit the present study and being able to conduct high quality empirical research. All constructs were measured through multiple-item scales and a five-point Likert-type response format (very good to very bad).

Interest in understanding patients' views on the health care quality has increased substantially in recent years. This is a positive development since patients' perceptions of quality are essential for determining effectiveness, efficiency and improving health care delivery. Patient questionnaires using mainly the SERVQUAL model been the main instrument for gauging patient satisfaction, and are being used across most of the health care sector. Although these efforts have been positive in the sense that patient perspectives are receiving greater attention, a range of quality shortcomings have been identified. The survey methodology has been criticized, among other things for deficient validity and reliability, and a weak orientation towards change.

In this study we modelled the patient satisfaction as a function of the 5Q dimensions. Each dimension includes some relevant attributes. Based on the previous researches and discussion above, these attributes are most important to influence patients' satisfaction.

## Analysis and results

This section presents the results of the analyse of the research quality dimensions, based on the propositions that the 5Qs variables are impacting the patients' satisfaction. Some examples of the results of the entire ranking by the inpatients of clinics A, B and C are shown in Tables I-III.

### *Q1. Quality of object "curing"*

Q1 refers to the technical service quality, for example, relates to the clinical procedures carried out and it focuses on the technical accuracy of medical diagnosis and procedures. Figure 3 shows the patient rating on the attributes of the quality of the treatment performed by the physicians and nurses of the three hospitals.

From the physiological point of view the sense of wellbeing that the inpatients feel is one of the most important factors impacting not only the level of satisfaction, but also the overall health condition. Figure 3 shows that a considerable number of the patients (38 persons or 32 per cent) at hospital A had been felt very bad and insecure. This number is decreased to 25 persons or 21 per cent when asked about the ability of the hospital to treat them the way they were expecting. However, this number considerably increases when taking into account both very bad and bad options – 40 per cent felt bad and very bad about sense of wellbeing at hospital while 53 per cent felt the same with the respect to ability of the hospital to treat the way the patient expected.

One explanation of such a huge number of the dissatisfied patients at hospital A could be that the patients had less image than the real experience. Another explanation is that this is a large public hospital in the city which receives a huge number of patients every day.

On the contrary, the patients at hospitals B and C were rather very satisfied regarding the wellbeing they felt in the hospital. At hospital B and hospital C, 50 per cent of the patients felt good or very good wellbeing at this hospital. However, at hospital B only 35 per cent were very or just satisfied with the ability of the hospital to treat them the way they were expecting. A total of 33 per cent were not satisfied and 32 per cent felt indifferent. On the other hand, at hospital C the number of patients who believed that the hospital was able to treat them the way they were expecting was higher than those who had very good or good sense of wellbeing at this hospital (58 per cent of patients feeling very good or good about ability of the hospital to treat them the way they were expecting while 50 per cent feeling very good or good with respect to wellbeing at this hospital).

This is important because accuracy can be improved through quality control measures, training, and double reading of results.

### *Q2. Quality of the treatment processes "caring"*

Q2 "caring" is the quality of the medical processes or functional quality alludes to the manner in which or process by which the health care is delivered. Figure 4 shows the results for analysed hospitals.

The perception and satisfaction rating of the quality of the treatment processes revealed that only 3 per cent of the inpatients at hospital A and B were very satisfied with the waiting time of medication. On the contrary, 16 per cent of the patients at hospital C were very satisfied with that attribute. While the waiting time for tests is perceived as very good or good quality by 44 per cent of the patients at clinic C, only 14



Table I.  
Hospital A

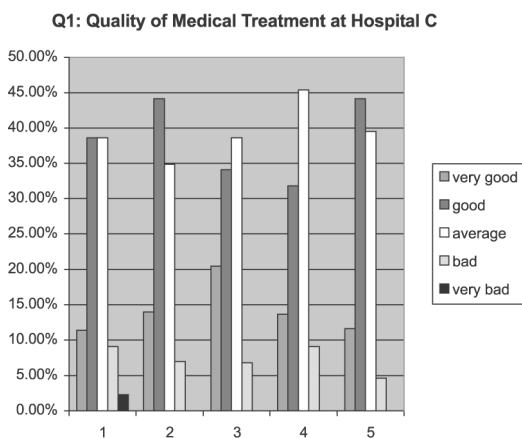
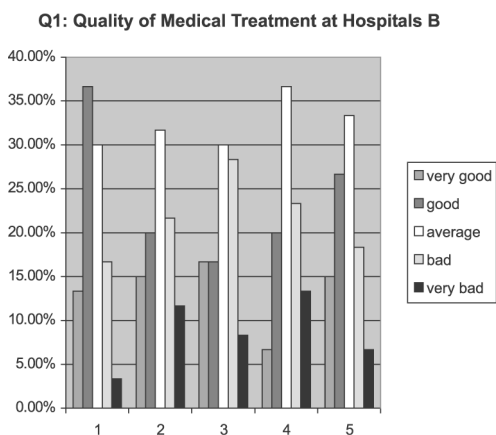
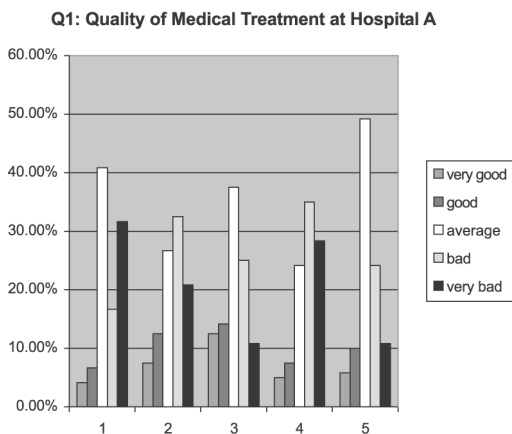
	5	4	3	2	1	5	4	3	2	1
	V. good	Good	Average	Bad	V. bad	V. good	Good	Average	Bad	V. bad
	n	(%)	(%)	(%)	(%)	n	(%)	(%)	(%)	(%)
<i>Q1 Quality of object:</i>										
Sense of wellbeing that you felt in the hospital	5	8	49	20	38	120	4.17	40.83	16.67	31.67
Ability of the hospital to treat you the way you expected	9	15	32	39	25	120	7.50	26.67	32.50	20.83
Sense of security from physical harm you felt in the hospital	15	17	45	30	13	120	12.50	37.50	25.00	10.83
<i>Q2 Quality of process:</i>										
Waiting time for medication	4	12	52	37	15	120	3.33	43.33	30.83	12.50
Waiting time for tests	10	7	55	28	20	120	8.33	45.83	23.33	16.67
Speed and ease of admissions	9	11	53	27	20	120	7.50	44.17	22.50	16.67
<i>Q3 Quality of infrastructure:</i>										
Skills of the nurses attending you	7	9	41	23	40	120	5.83	34.17	19.17	33.33
Skill of those performing your tests	9	12	56	27	16	120	7.50	46.67	22.50	13.33
Skill of the physicians attending you	10	12	64	19	15	120	8.33	53.33	15.83	12.50
<i>Q4 Quality of interaction:</i>										
Adequacy of explanation about your treatment	12	9	40	29	30	120	10.00	33.33	24.17	25.00
Adequacy of instruction on release from the hospital	8	16	61	29	6	120	6.67	50.83	24.17	5.00
<i>Q5 Quality of atmosphere:</i>										
Responsiveness of nurses to your needs	12	14	48	33	13	120	10.00	40.00	27.50	10.83
Clarity of information about your condition	12	14	52	28	14	120	10.00	43.33	23.33	11.67
Politeness of the physicians	10	8	38	35	29	120	8.33	31.67	29.17	24.17

	5	4	3	2	1	5	4	3	2	1
	V. good	Good	Average	Bad	V. bad	V. good	Good	Average	Bad	V. bad
	n				n	(%)	(%)	(%)	(%)	(%)
<i>Q1 Quality of object:</i>										
Sense of wellbeing that you felt in the hospital	8	22	18	10	2	13.33	36.67	30.00	16.67	3.33
Ability of the hospital to treat you the way you expected	9	12	19	13	7	15.00	20.00	31.67	21.67	11.67
Sense of security from physical harm you felt in the hospital	10	10	18	17	5	16.67	16.67	30.00	28.33	8.33
<i>Q2 Quality of process:</i>										
Waiting time for medication	2	13	23	20	2	3.33	21.67	38.33	33.33	3.33
Waiting time for tests	3	12	32	6	7	5.00	20.00	53.33	10.00	11.67
Speed and ease of admissions	4	6	33	7	10	6.67	10.00	55.00	11.67	16.67
<i>Q3 Quality of infrastructure:</i>										
Skills of the nurses attending you	3	9	22	14	12	5.00	15.00	36.67	23.33	20.00
Skill of those performing your tests	5	12	26	9	8	8.33	20.00	43.33	15.00	13.33
Skill of the physicians attending you	6	7	28	13	6	10.00	11.67	46.67	21.67	10.00
<i>Q4 Quality of interaction:</i>										
Adequacy of explanation about your treatment	7	6	22	15	10	11.67	10.00	36.67	25.00	16.67
Adequacy of instruction on release from the hospital	8	7	24	15	6	13.33	11.67	40.00	25.00	10.00
<i>Q5 Quality of atmosphere:</i>										
Responsiveness of nurses to your needs	3	4	22	19	12	5.00	6.67	36.67	31.67	20.00
Clarity of information about your condition	5	4	24	18	9	8.33	6.67	40.00	30.00	15.00
Politeness of the physicians	6	5	18	17	14	10.00	8.33	30.00	28.33	23.33

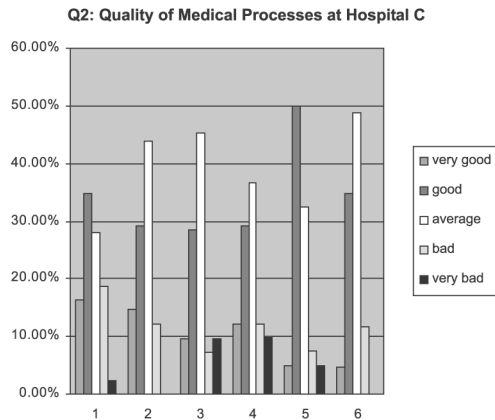
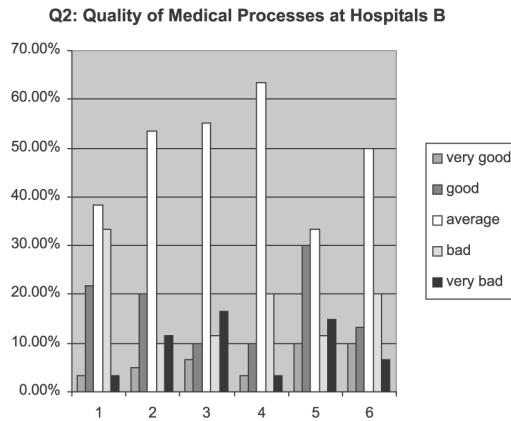
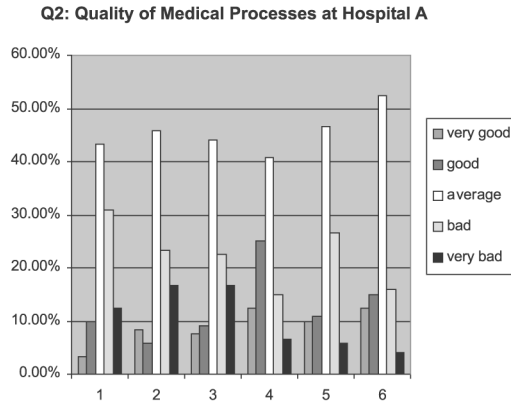
Table II.  
Hospital B

Table III.  
Hospital C

	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	
	V. good	Good	Average	Bad	V. bad	V. good	Good	Average	Bad	V. bad	V. good	Good	Average	Bad	V. bad	
						(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	
	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	
<i>Q1 Quality of object:</i>																
Sense of wellbeing that you felt in the hospital	5	17	17	4	1	44	38.64	38.64	9.09	2.27	44	38.64	38.64	9.09	2.27	
Ability of the hospital to treat you the way you expected	6	19	15	3	0	43	34.88	34.88	6.98	0.00	43	44.19	34.88	6.98	0.00	
Sense of security from physical harm you felt in the hospital	9	15	17	3	0	44	34.09	38.64	6.82	0.00	44	20.45	38.64	6.82	0.00	
<i>Q2 Quality of process:</i>																
Waiting time for medication	7	15	12	8	1	43	34.88	27.91	18.60	2.33	43	16.28	34.88	18.60	2.33	
Waiting time for tests	6	12	18	5	0	41	29.27	43.90	12.20	0.00	41	14.63	43.90	12.20	0.00	
Speed and ease of admissions	4	12	19	3	4	42	28.57	45.24	7.14	9.52	42	9.52	45.24	7.14	9.52	
<i>Q3 Quality of infrastructure:</i>																
Skills of the nurses attending you	7	25	12	0	0	44	56.82	27.27	0.00	0.00	44	15.91	56.82	0.00	0.00	
Skill of those performing your tests	11	19	11	0	0	41	25.00	43.18	0.00	0.00	41	25.00	43.18	0.00	0.00	
Skill of the physicians attending you	12	24	7	1	0	44	27.27	15.91	2.27	0.00	44	27.27	15.91	2.27	0.00	
<i>Q4 Quality of interaction:</i>																
Adequacy of explanation about your treatment	7	20	12	4	0	43	46.51	27.91	9.30	0.00	43	16.28	46.51	9.30	0.00	
Adequacy of instruction on release from the hospital	6	14	18	5	1	44	31.82	40.91	11.36	2.27	44	13.64	31.82	11.36	2.27	
<i>Q5 Quality of atmosphere:</i>																
Responsiveness of nurses to your needs	8	18	16	1	1	44	40.91	36.36	2.27	2.27	44	18.18	40.91	2.27	2.27	
Clarity of information about your condition	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	
Politeness of the physicians	7	24	12	1	0	44	54.55	27.27	2.27	0.00	44	15.91	54.55	2.27	0.00	



**Figure 3.**  
Ranking of measures of Q1 by patients of clinics A, B and C



**Figure 4.**  
Ranking of measures of  
Q2 by patients of clinics  
A, B and C

per cent at A and 25 per cent at B consider the waiting time for tests as very good or good. A total of 40 per cent of patients at A, 22 per cent at B and only 12 per cent at C clinics feel dissatisfaction with the waiting time for tests.

### *Q3. Quality of infrastructure*

A total of 12 items were used to measure the quality of the infrastructure. Figure 5 illustrates the result of the measures of the quality of the infrastructure at the three clinics.

Infrastructure of the medical organisation is the most important factor impacting the cure of the patients and hence their overall satisfaction. It is related to the competence, skills, attitudes, motivations and reassures. These indicators should be considered very critical and important because the lack of any of these factors explains poor quality of care.

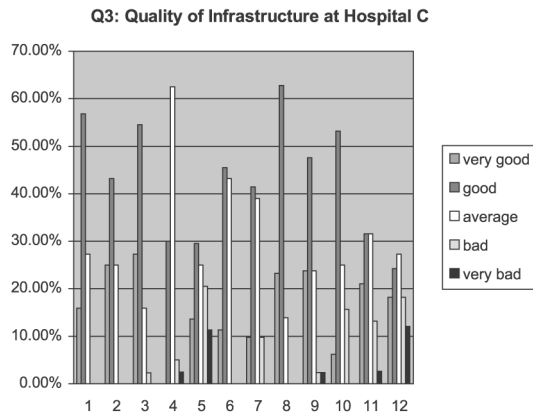
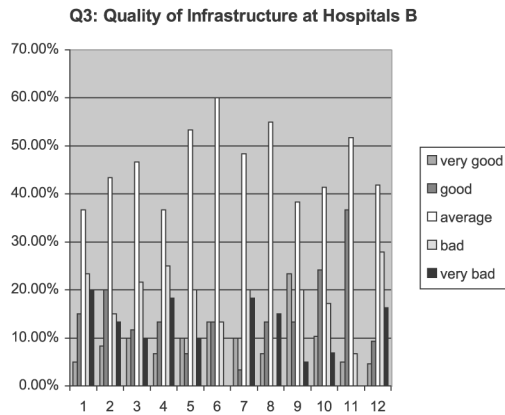
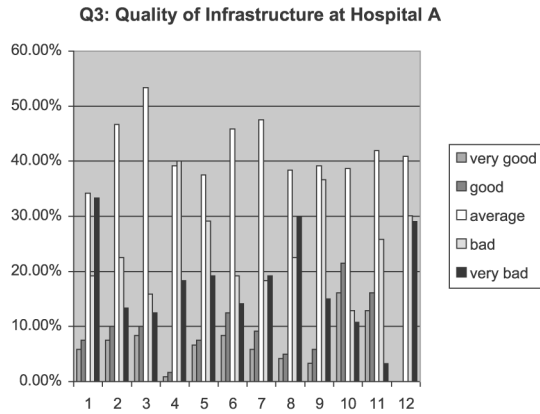
It is a well-known fact that the skills of the physicians and nurses are critical factors particularly in relief or cure of ill health and this creates the imperative to assure highly qualified staff in medicine and nursing. The results of our research confirm our knowledge that clinic C is one of the most modern clinic in the country with reasonable human and financial resources – 82 per cent of its patients measured the skills of the physicians as good or very good. On the contrary, this item is also perceived as good or very good by only 22 per cent of B patients and even less (18 per cent), by patients of clinic A. Another serious indicator is the low skills of the nurse at clinics A and B as it felt or experienced as bad or very bad by 53 per cent of patients at A and 43 per cent by B. On the contrary, in clinic C none of the patients in the sample felt that skills of nurses are bad or very bad. Cleanliness of the C hospital was also perceived best comparing with the hospitals A and B.

### *Q4. Quality of interaction*

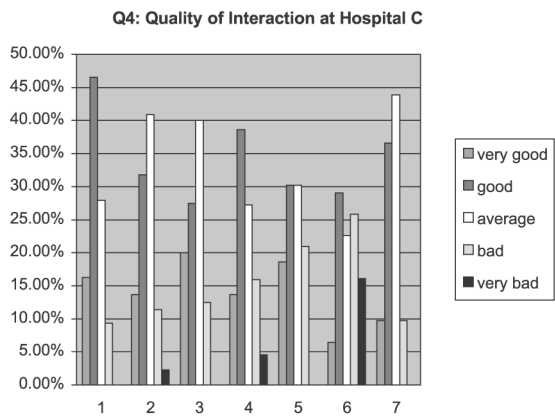
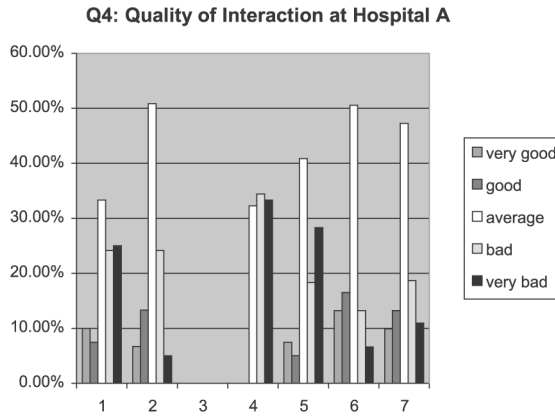
Quality of interaction measures the quality of information exchange, financial exchange and social exchange and hence it is another important factor influencing patients satisfaction with healthcare. Patients' satisfaction is influenced upon receiving an adequate explanation and instructions during and after hospital treatment. Figure 6 shows that only 17 per cent of patients at clinic A felt very good or good about the adequacy of explanation about treatment, while almost 50 per cent were not satisfied with this item.

A little better situation is presented at clinic B, where 21 per cent of patients considered adequacy of explanation as good or very good. On the contrary, in clinic C almost 63 per cent of patients admitted their good or very good satisfaction with the explanation and hence with their understanding about the treatment. When considering the adequacy of instructions upon release from hospital, in clinic A 21 per cent of patients felt very good or good about those instructions, while at clinic B as much as 25 per cent of patients. In clinic C the situation with regard to this item is relatively the best (45 per cent admitted their satisfaction with adequacy of instructions on release from hospital), however this satisfaction is lower when comparing with adequacy of explanation about the treatment (45 per cent with respect to 63 per cent).





**Figure 5.**  
Ranking of measures of  
Q3 by patients of clinics  
A, B and C



**Figure 6.**  
Ranking of measures of Q4 by patients of clinics A, B and C

*Q5. Quality of atmosphere*

The atmosphere indicators should be considered very critical and important because of the belief that lack of frankly and friendly atmosphere explains poor quality of care in developing countries (Figure 7).

In hospital A many of patients are not satisfied with the responsiveness of nurses to their needs as well as with politeness of nurses: 38 per cent ranked the responsiveness of nurses as bad or very bad and 42 per cent estimated their politeness as bad or very bad. The situation in the hospital is even worse when considering the politeness of physicians – 44 per cent of patients ranked the satisfaction with respect to this item as bad or very bad.

Even worse situation is presented in hospital B: 52 per cent of patients ranked their satisfaction with responsiveness of nurses as well as politeness of physicians as bad or very bad, while 42 per cent ranked the politeness of nurses as bad or very bad. On the other hand, in hospital C patients are in general very much satisfied with atmosphere in the hospital: 59 per cent estimated the responsiveness of nurses as good or very good, 61 per cent ranked their satisfaction with nurses politeness as very good or good, while even more, 70 per cent, felt the same about politeness of physicians.

*Quality dimensions, patients' satisfaction and recommendation*

Patients' satisfaction with different service quality dimensions is correlated with their willingness to recommend the hospital to others as represented by Figure 8 and Table IV.

A summary of the mean scores with regard to the dimensional and total qualities is illustrated in Table IV and Figure 9.

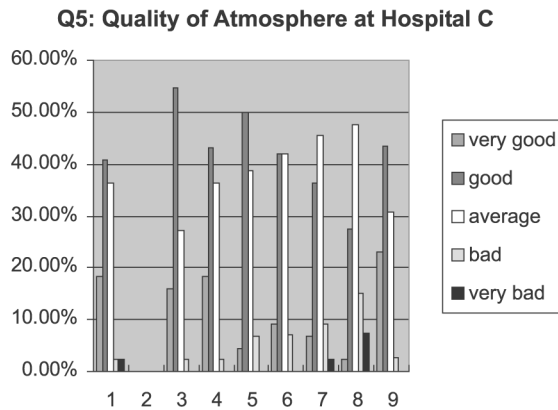
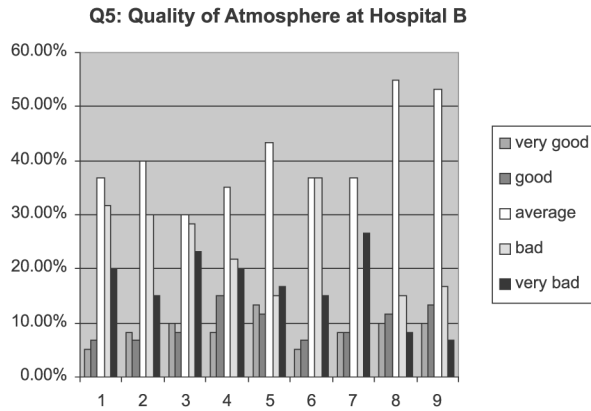
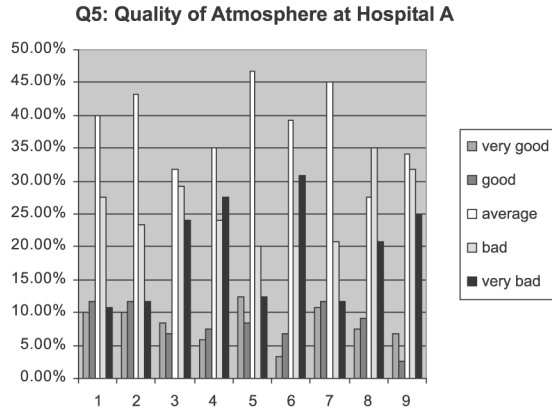
The mean scores of dimensional and total qualities confirm the results we received when analysing the particular items of quality dimensions: patients of hospital C are mostly satisfied with the service they received in this hospital. While Q1 has been ranked as lowest at hospitals A and B, it has been ranked as highest at hospital C. Similarly, Q2, Q3 and Q4 are ranked as highest at C but lowest at A and B. Q5 is ranked as highest at C and lowest at B.

Hospital C has above average total and dimensional qualities and patients are the most satisfied with accordance to all dimensions of service. Hospitals A and B have under average total qualities as majority of patients are not satisfied with the service. The survey reveals that, in majority of dimensions (with exception of Q5), the quality in hospitals B is higher than in hospital A. We think that it might be due to the fact that hospitals B are semi-public hospitals, which have more resources and better qualified staff to provide better quality of health care.

Considering the relationship between patients satisfaction and recommendation, we can conclude that very satisfied patients are recommending the hospital to others, like in the case of patients of hospital C. Dissatisfied patients in hospital A are discouraged from recommending the service of this hospital to others. A very interesting case is represented by hospitals B, where patients are willing to recommend the hospitals to a larger extent than they are satisfied with the service.

**Discussion, conclusion and implications**

Table V shows the ten attributes seen by patients at hospitals A, B and C as the most critical health care shortcomings which lead to patient dissatisfaction (ranked as a



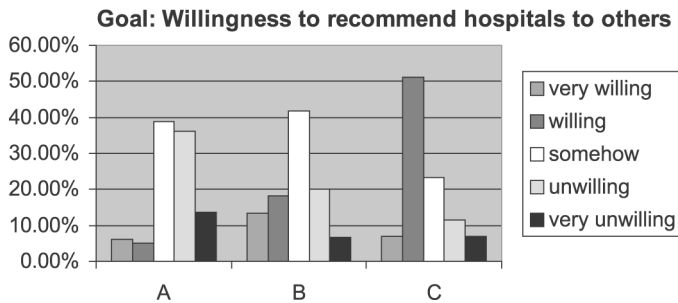
**Figure 7.**  
Ranking of measures of Q5 by patients of clinics A, B and C

halfway between “bad and very bad ” on the Likert scale) while Table VI exhibits the importance of quality dimensions for those ten attributes. It should be noted that, because of the differences in the financial, human and technological resources available for each hospital, our aim here is not to compare between the hospitals. The main goal is to shed light on the shortcoming of the quality issues and to suggest some recommendations.

The biggest problem in hospital A according to its patients is difficulty with getting in touch with hospital personnel on the phone, hospital concern for patients needs and availability of parking facilities for visitors. On the other hand, in hospitals B patients were mostly dissatisfied with responsiveness of nurses and physicians to their needs and with politeness of the physicians. In hospital C the biggest problem turned out to be waiting time for refund, temperature of the food, and availability of parking for visitors.

Our results shown that the way to improve patients’ satisfaction in hospital A is to influence on two dimensions of total quality: quality of infrastructure (Q3) and quality of atmosphere (Q5). The similar situation is observed in hospital B: the changes implemented in infrastructure and atmosphere in hospital can improve patients’ satisfaction. On the other hand, in hospital C the patients were mostly dissatisfied with quality of process (Q2), quality of infrastructure (Q3) and quality of interaction (Q4).

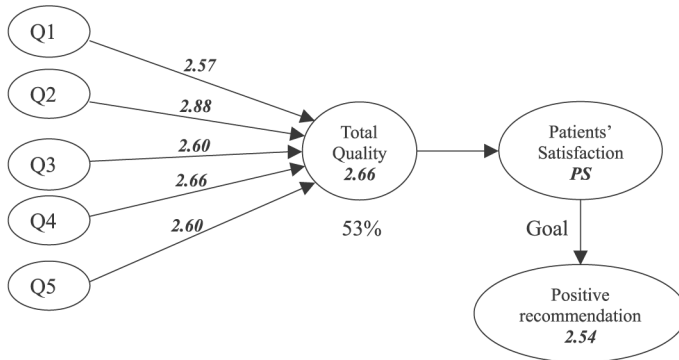
A cure for improving the quality of healthcare services can be an application of TRM and the 5Qs model together with customer orientation strategy. One reason of why the health care quality in Egypt still falling behind many other countries can be due to the fact that Approximately 3.7 per cent of Egyptian GDP was spent on healthcare in 1994. Per capita spending was US\$38. This level of spending is on the



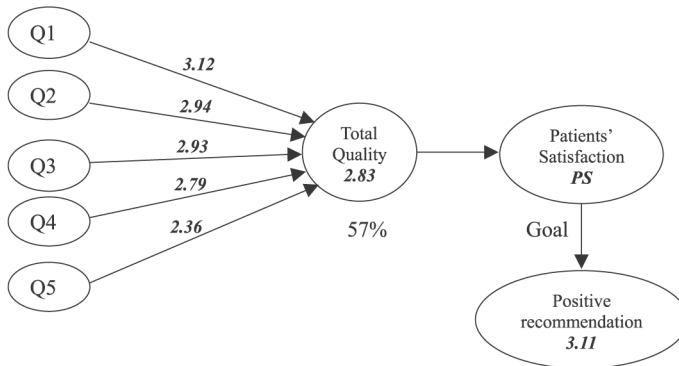
**Figure 8.**  
Willingness to recommend the clinics A, B and C by patients

Quality determinant	Mean score		
	A	B	C
Q1	2.57	3.12	3.59
Q2	2.88	2.94	3.35
Q3	2.60	2.93	3.66
Q4	2.66	2.79	3.43
Q5	2.60	2.36	3.58
Mean score for the total quality	2.66	2.83	3.52
Mean goal/willingness to recommend	2.54	3.11	3.40

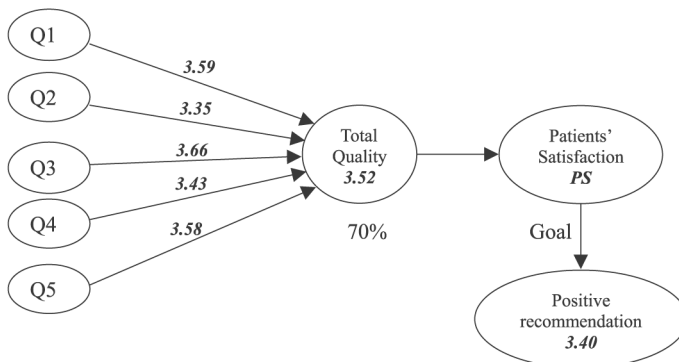
**Table IV.**  
5Qs model: hospitals A, B and C



(a) 5Q Model: Results for clinic A



(b) 5Q Model: Results for clinics B



(c) 5Q Model: Results for clinic C

**Figure 9.**  
5Q model: results for clinics A, B and C



Table V.  
"Worst ten"

Hospital A	%	Qs	Hospitals B	%	Qs	Hospital C	%	Qs
Ease of getting hold of hospital personnel on the phone	68	Q4	Responsiveness of nurses to your needs	52	Q5	Waiting time for refund, if due	42	Q4
Hospital concern for your particular needs	63	Q5	Politeness of the physicians	52	Q5	Temperature of the food	32	Q3
Availability of visitor parking	59	Q3	Responsiveness of the physicians to your needs	52	Q5	Ability of visitor parking	30	Q3
Taste of the food	58	Q3	Hospital concern for family and visitors	47	Q5	Availability of sleeping accommodations for your family	23	Q5
Pleasantness and appeal of hospital room	57	Q5	Amount of time spent by staff understanding your needs	47	Q4	Time between admission and getting into your room	22	Q2
Ability of sleeping accommodations for your family	56	Q5	Clarity of information about your condition	45	Q5	Amount of time spent by staff understanding your needs	21	Q4
Politeness of the physicians	53	Q5	Availability of visitor parking	44	Q3	Waiting time for medication	21	Q2
Physical appearance of room	53	Q3	Skills of the nurses attending you	43	Q3	Ease of getting hold of hospital personnel on the phone	20	Q4
Skills of the nurses attending you	53	Q3	Taste of the food	43	Q3	Speed and ease of admissions	17	Q2
Ability of the hospital to treat you the way you expected	53	Q1	Ease of getting hold of hospital personnel on the phone	42	Q4	Accuracy of the billing procedure	16	Q3

lower side in comparison to most developing countries, and especially taking Egypt's income level one might expect it to be higher. In the USA the expenditure on health care was 9 per cent in 1995 and in 1998, Jordan spent approximately US\$136 per capita. Total health expenditures represented 9.12 per cent of GDP.

Another reason is the lack of resources that leads to that the physicians and nurses time is not enough to provide a more efficient services. They might be a very productive but less efficient. Low level of efficiency has a positive correlation with the low quality of the services or the treatment. Some other reasons can be the low Professionals' income of the health care staff, the lack of management skills and the heavy work load, which leads to insufficient professional control over the health care staff and processes.

TRM argues that the improvement of the quality and patients satisfaction requires good atmosphere and infrastructure in form of good relationship between the physicians, nurses, other hospital employees and the hospital. Longo (1994) describes the hospital and physician as having "mutually dependent relationships". Longo emphasises the importance of physicians and hospitals working together to develop guidelines and measurement standards.

Lohr (1988) further expounds on outcome standards. Lohr defines outcomes as "the end result of medical care: what happened to the patient in terms of palliation, control of illness, cure or rehabilitation". The process used to reach the final outcome is viewed as a vital part of measurement programmes. Lohr discusses the components of process measures as including technical competence and interpersonal aspects of care. She goes on to define "the 5Ds of outcome measures", which can be applied to individual practitioners. These are:

- (1) *Death*: physician-specific monitoring of mortality rates.
- (2) *Disease*: control of chronic illness.
- (3) *Disability*: patients' ability to function and contribute to society (functional status).
- (4) *Discomfort*: control of pain, which interferes with health status.
- (5) *Dissatisfaction*: consumer's evaluation of the process of care delivery.

These measurements attempt to evaluate both process and final outcomes of patient care. However, the final outcomes is out of the scope of our study.

Given the importance of – and increasing political attention being given to – the functional aspects of care, it does appear that the 5Qs instrument has a useful diagnostic role to play in assessing and monitoring health care service quality, enabling the health care staff identify where improvements are needed from the patients' perspective.

Hospital	Q1 (%)	Q2 (%)	Q3 (%)	Q4 (%)	Q5 (%)
A	10	0	40	10	40
B	0	0	30	20	50
C	0	30	30	30	10

**Table VI.**  
The importance of quality dimensions in the ranking of "worst ten"

Given the limitations of this study, the results discussed here are clearly not generalizable. The study, on the other hand, has raised a number of issues that may form the basis for useful further research.

- The use of the 5Q dimensions provides both a structure for designing a service quality measurement instrument and a framework for prioritising results and findings.
- The 5Qs results can be used in a variety of ways: “understanding current service quality; comparing performance across different hospitals and countries; comparing performance across different parts of the service and assessing the impact of improvement initiatives”.

With the pressures being placed on health care systems to improve and maintain quality care, it is imperative that measurement systems be established. These systems should focus on continuous improvement of care. Medical management of specific patient populations will be an essential component of these improvements.

In this study, a 5Qs model to measure the patients' satisfaction of medical care is proposed. It encompasses technical, functional, interaction, infrastructure and the atmosphere qualities and services. Developing comprehensive measurement tools for the patients will be only the initial step for the institution in truly managing patient care. The long-term beneficiary of these improvements will be the health-care consumer. The consumer can expect the most cost effective quality care that is consistently measured and improved.

### Further research

So far, the literature review has focused on the components of quality and service measurements. To complete the triad, cost measures and evaluation of the efficient performance of the physicians must also be researched. The hospitals and medical manager should find out ways and methods to measure the performance of the physicians and nurses as well as of the costs effective health care.

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### Further reading

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### Appendix. The 5Qs and the attributes

- (1) *Q1. Quality of object* (that attribute can be seen as the technical quality or the quality of the treatment itself:
  - sense of wellbeing that you felt in the hospital;
  - ability of the hospital to treat you the way you expected;
  - sense of security from physical harm you felt in the hospital; and
  - performance of services when they were supposed to be performed.
- (2) *Q2. Quality of process* (that quality can be seen as the functional quality or how the services are provided):
  - waiting time for medication;
  - waiting time for tests;
  - speed and ease of admissions; and
  - time between admission and getting into your room.
- (3) *Q3. Quality of infrastructure*:
  - skills of the nurses attending you;
  - skill of those performing your tests;
  - skill of the physicians attending you;
  - temperature of the food;
  - professional appearance of physicians and nurses;
  - physical appearance of room; and
  - cleanliness of the hospital.



- (4) *Q4. Quality of interaction:*
- adequacy of explanation about your treatment;
  - adequacy of instruction upon release from the hospital;
  - ability of the hospital to give what they promised in advertising (in case of private hospital);
  - ease of getting hold of hospital personnel on the phone;
  - amount of time spent by staff understanding your needs;
  - waiting time for refund, if due; and
  - instructions about billing procedures.
- (5) *Q5. Quality of atmosphere:*
- responsiveness of nurses to your needs;
  - ability of information about your condition;
  - politeness of the nurses;
  - politeness of other hospital staff;
  - responsiveness of the physicians to your needs;
  - hospital concern for family and visitors; and
  - ability of sleeping accommodations for your family.

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