ABSTRACT

Improving the quality of healthcare services available to patients and increasing the efficiency of medical service delivery processes are two pressing needs of the U.S. healthcare system. The objective of this research is to offer a comprehensive measure of patient care quality which captures all the different dimensions of the healthcare services that patients receive. The proposed dimensions will be empirically validated using an online survey and structural equation modeling. The resulting dimensions of patient care quality could guide future healthcare research in this area.

KEYWORDS: Patient care quality, interpersonal quality, technical quality, environmental quality, administrative quality

INTRODUCTION

A report by the Institute of Medicine (IOM)—To Err is Human (Kohn, Corrigan, & Donaldson, 1999)—estimated that within the U.S. as many as one million people were injured and 98,000 died in a year as a result of medical errors. The high number of avoidable injuries and deaths due to medical errors have forced both academicians and practitioners to study the quality of healthcare available in the U.S. in order to find methods to improve it (Boyer, Gardner, & Schweikhart, 2012; McFadden, Henagan, & Gowen, 2009; Pronovost, Miller, & Wachter, 2006; Wachter, 2010).

In extant literature, a few studies have investigated different issues that affect the quality of patient care available to patients. A recent study differentiated between patient safety climates, practices and outcomes, while also considering the process of care quality as defined by the Center for Monitoring Studies (CMS) (Boyer et al., 2012). An earlier study focused on patient safety initiatives (McFadden, Stock, & Gowen, 2006) as a major determinant of patient care quality. Two other recent studies factored in experiential quality from a patient’s point of view in their research model (Chandrasekaran, Senot & Boyer, 2012; Nair, Nicolee & Narasimhan, 2013), while a third study referred to hospital quality and patient safety (Isaac, Zaslavsky, Cleary & Landon, 2010). Like many other studies in literature, Isaac et al.’s (2010) study relied on the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey for their measures. The HCAHPS survey, which is widely cited in healthcare studies, was administered by the Hospital Quality Alliance (HQA), a collaboration of leading health care organizations that has identified standard measures of hospital quality (Jha et al., 2005; Landon...
et al., 2006) but these measures are specific to diseases/ailments and length of stay required for the cure.

In medical practice, although extensive research has been conducted by CMS and Agency for Healthcare Research and Quality (ARHQ), the focus of the research was also on disease/ailment-specific quality. A few examples of the detailed metrics to measure different aspects of patient care quality for each disease/ailment are: (1) ARHQ measures—heart failure mortality rate and acute stroke mortality rate (AHRQ, 2013); and (2) CMS measures—30-day risk-standardized readmission measures for diseases/ailments such as acute myocardial infarction, heart failure and pneumonia (CMS, 2013). These measures do not take into account the overall quality of patient care in the hospital.

To the best of our knowledge, there is no study in the U.S. context that has considered all aspects of overall patient care quality without using measures that are either disease/ailment specific or depend upon the length of hospital stay for the cure. Thus, we believe that patient care quality has not been comprehensively measured in the U.S., leaving us to question if hospitals have a true picture of all the related dimensions of patient care and the quality of services that they offer to their admitted patients. We therefore investigate the following research question: What are the underlying dimensions of patient care quality?

The objective of the present study is to empirically test and offer valid and reliable measures for overall patient care quality that are not specific to any disease/ailment. The only major study that included all four dimensions of patient care quality (Dagger et al., 2007) was conducted with healthcare professionals in a clinical setting in Australia. By using these four dimensions—interpersonal quality, technical quality, environmental quality and administrative quality from literature (e.g., Chang, Ma, Chiu, Lin, & Lee, 2009; Ma, Yang, Lee, & Chang, 2009; Dagger et al., 2007), the present study attempts to incorporate all the different aspects of the quality of healthcare services by extending Dagger et al. (2007) study to admitted patients in U.S. hospitals. Future healthcare studies in the U.S. may find it beneficial to use such a measure because all the different attributes of patient care quality need to be considered when measuring quality of healthcare services that are delivered to patients.

This manuscript is organized as follows. First, we review the interdisciplinary literature on patient care quality. Second, based on a review of extant literature, we suggest that the construct has four sub-dimensions. Third, we compare our study with the major studies and establish that most studies have not used a comprehensive form of the construct. Finally, we end with a discussion highlighting the research methodology for the proposed study and discuss implications of the study to both academicians and practitioners.

LITERATURE REVIEW

Quality management (QM) is an integrative philosophy for continuously improving the quality of products and processes (Feigenbaum, 1961). The basic premise is that the quality of products/services and processes of their manufacture/generation is the responsibility of everyone who is involved with the creation or consumption of the products/services (Feigenbaum, 1961). QM highlights the involvement of management, workforce, suppliers, and even customers in order to meet or exceed customer expectations (Ahire, 1997; Deming, 1986; Kaynak & Hartley, 2008).

In the healthcare context, quality improvement has been the focus of research for the last few decades. Although a lot of research has been conducted on quality related issues in
healthcare, there are still many quality related issues that have not yet been resolved (Boyer & Pronovost, 2010; Pronovost et al., 2006).

Hospitals are the primal scene of action for most healthcare services that any person receives—diagnostic services to surgery to continuous nursing care and advanced disease/medical treatments. Hospitals could be of various types—small, free-standing rural facilities or part of a vast, multi-facility, geographically dispersed integrated system. Some hospitals could specialize into cures for particular diseases such as AIDS cure center, or for particular types of procedures such as cardiology and heart surgery centers. Others could be full-service hospitals that medically treat most of the ailments that people may have (W. J. Flynn, Mathis, Jackson, & Langan, 2004). Of the 4,806 hospitals ranked by U.S. News in their latest 2013-14 rankings only 738 (15.35%) were specialty hospitals, at both national and regional levels (Comarow, 2013). The vast majority of U.S. hospitals are thus full-service hospitals.

Patient care quality is defined as the quality of the medical care received by admitted patients in hospitals (e.g. Chang, Ma, Chiu, Lin, & Lee, 2009; Dagger et al., 1997; Ma, Yang, Lee, & Chang, 2009; Nelson & Niederberger, 1990; Van Ess Coeling & Cukr, 2000; Ware et al., 1983). Earlier studies in medical and healthcare literature and health service quality studies in marketing have focused mainly on studying patient’s satisfaction with medical care (Altman, Clancy, & Blendon, 2004; Chang et al., 2009; Dagger et al., 2007; Ma et al., 2009; Nelson & Niederberger, 1990; Van Ess Coeling & Cukr, 2000; Ware et al., 1983). This research focuses on the quality of patient care from hospital administrators and healthcare team perspective. In order to better understand the different aspects of quality of the healthcare services, we review the major studies in literature on patient care quality. These studies are presented in Table 1.

A careful review of the studies in Table 1 indicates that most studies have focused on patient safety. While safety of admitted patients is important, hospitals also use general and outcome-specific efforts to improve the quality of healthcare services.

In the healthcare context, patient care quality represents the quality of the service delivered by the hospitals. QM theory (Ahire, Golhar, & Waller, 1996; Feigenbaum, 1961; Jayaram, Ahire, & Dreyfus, 2010; Kaynak & Hartley, 2008) supports the different dimensions of the construct. In order to include all aspects of quality of healthcare services that a patient receives in a hospital the literature suggests that patient care quality has the following four primary dimensions (Dagger et al., 2007): interpersonal, technical, environmental and administrative quality.

Interpersonal quality reflects the relationship developed and the dyadic interplay that occurs between the healthcare team and patient (Dagger et al., 2007; Gill & White, 2009). It takes into consideration issues such as whether healthcare teams treat their patients with respect. All team members must do their best to keep the patient from worrying about his/her ailment. They need to explain the ailment to the patient or their kin in simple terms that they can understand. Also, the teams should explain to the patient why certain foods are best and why certain hygiene procedures are perfect under their medical condition (Dagger et al., 2007).

Technical quality reflects the expertise, professionalism, and competency of the healthcare team in delivering the cure (Dagger et al., 2007; Gill & White, 2009). It includes issues such as whether patients are administered the correct medical care that are required to cure their ailments. Tests such as X-rays and lab tests should be ordered on patients only when required. Doctors must be available to check on patients when needed and specialty suites such as operation theatres, emergency rooms and ICUs need to be available when needed (Dagger et al., 2007).
Table 1. Patient Care Quality Dimensions Identified in Literature

<table>
<thead>
<tr>
<th>Study</th>
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<tr>
<td>Donabedian (1968)</td>
<td>Application of modern scientific medicine</td>
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<td></td>
<td>Emphasizes prevention</td>
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<td>Requires cooperation between patients and physicians</td>
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<td>Considers the individual as a whole</td>
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<td></td>
<td>Maintains close and continuing personal relation between physicians and patients</td>
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<td></td>
<td>Coordinated with social welfare work</td>
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<tr>
<td></td>
<td>Includes all types of medical services</td>
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<tr>
<td>McFadden et al. (2006)</td>
<td>Patient safety</td>
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<td>Emphasizes prevention</td>
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<td>Coordinated with social welfare work</td>
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<td>Includes all types of medical services</td>
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<tr>
<td>Dagger et al. (2007)</td>
<td>Interpersonal quality</td>
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<td></td>
<td>Technical quality</td>
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<td></td>
<td>Environmental quality</td>
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<td>Isaac et al. (2010)</td>
<td>Communication with nurses</td>
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<td></td>
<td>Communication with doctors</td>
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<td></td>
<td>Responsiveness of hospital staff</td>
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<td>Boyer et al. (2012)</td>
<td>Patient satisfaction data collection by surveys, focus groups</td>
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<td></td>
<td>Quality teams of employees</td>
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<td>Chandrasekaran et al. (2012)</td>
<td>Clinical quality</td>
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<td></td>
<td>Statistical quality</td>
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<td></td>
<td>Competitive benchmarking of best-in-class processes</td>
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<td>Nair et al. (2013)</td>
<td>Experiential quality</td>
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<td>Experiential quality</td>
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<tr>
<td>Communication about medicines</td>
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<td>Discharge information</td>
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<td>Cleanliness and quietness of hospital</td>
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Environmental quality comprises hospital atmosphere such as cleanliness and order. It also includes tangibles such as hospital bed and necessary equipment like drip stands and other required equipment for patient health needs (Dagger et al., 2007; Gill & White, 2009). Adequate numbers of parking spaces must be located close to the hospital building. Hospital buildings must have doors that are easily operated with the push of a button at a height which can be reached while seated in a wheelchair. Housekeeping must ensure that the hospital floors are safe at all times by removing clutter.

Administrative quality facilitates the production of the core medical cure while adding value to patient (Dagger et al., 2007; Gill & White, 2009). It considers issues such as whether all charges billed to the patient are reasonable. When requested by the patient or his/her kin, the billing department should explain all detailed components of the bill promptly. Hospital administrative staff such as at reception and billing department personnel is always available to take patient calls during working hours.

Next, in order to clearly highlight the contribution of our study, we compare the dimensions of patient care quality used in this study with those of the major healthcare studies. This comparison is listed in Table 2.

A detailed examination of Table 2 shows that most studies, unlike ours and the study by Dagger et al. (2007), have not used all the four dimensions of patient care quality; they have used primarily technical quality. We therefore suggest that this study offers a more comprehensive patient care quality construct than those available in the literature.

DISCUSSION AND CONCLUSION

In this paper we reviewed the extant literature on quality of patient care and suggested that there are four dimensions of the construct. We then compared the dimensions of the construct used in this study with those in literature and found that most studies have used only one or two dimensions. In order to comprehensively measure quality of patient care, we intend to conduct an empirical study that would establish valid and reliable measures to guide future research in this area.

A cross-sectional online survey methodology will be used for this study. There are two reasons for using a survey rather than other type of research designs. First, the investigation of multiple variables in this study requires a large sample size to obtain reliable and valid results. A survey is a useful research tool to reach a large number of subjects (Cf. Kaynak, 1997). Second, full-service hospitals are scattered throughout the U.S.; hence limiting the study to a geographic region or one of the 50 U.S. states would not provide a sufficiently large sample size and would also restrict the generalizability of the results of this study.

Online cross-sectional surveys are now accepted in academic literature as valid and cost-effective means of reaching out to a scattered sample of respondents as they offer some advantages over the traditional forms (Barrios, Villarroya, Borrego, & Ollé, 2011; Callas, Solomon, Hughes, & Livingston, 2010; Evans & Mathur, 2005; Lonsdale, Hodge, & Rose, 2006; Meyerson & Tryon, 2003). The main advantage is that online surveys are relatively cheaper than the traditional paper and pencil ones.
### Table 2. Patient Care Quality Dimensions in Healthcare Studies

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<td>Interpersonal quality</td>
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<td>Technical quality</td>
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<tr>
<td>Environmental quality</td>
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<tr>
<td>Administrative quality</td>
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An analysis of the cost of paper versus web surveys for the Students Life Experiences Survey conducted at the Illinois Institute of Technology, determined that the average cost of paper surveys was $2.07 per person, as compared to the average cost of $0.88 for web-based surveys (Gunn, 2002). Other advantages of web surveys include the following: faster response rate, ease of sending reminders to participants, ease of processing data as responses can be easily downloaded to a spreadsheet, dynamic error checking capability, pop-up instruction inclusion for selected questions and use of drop-down boxes, most of which cannot be included in paper surveys (Gunn, 2002; Wright, 2005). Examining the results of previous research that compared mail and web surveys, Meyerson and Tryon (2003) concluded that online surveys are reliable, valid, representative, cost effective, as well as efficient.

Based on a review of literature across several interdisciplinary fields, we identified six items from the Dagger et al. (2007) study to measure each of the four dimensions of patient care quality—interpersonal quality, technical quality, environmental quality and administrative quality. Each item uses a Likert-type scale with 1-7; 1 being “strongly disagree” and 7 being “strongly agree”.

A pilot study will be conducted to gauge the reliabilities of the scales because the modified measures are now being applied to a different country and context—full-service hospitals in the U.S. The pilot test for this study will be done by emailing a random list of quality heads of hospitals in the U.S. Sending the target respondents a link to the online survey would be appropriate because the sample of the pilot test should be similar to that of the actual sample. The email will contain a link to the questionnaire hosted online. Although the sample size will be small, the data obtained in the pilot test will be used to perform some preliminary analyses like reliability measures using Cronbach’s alpha value.

Because this study investigates quality of care available to patients admitted in full-service hospitals, the target population is the list of full-service hospitals that exist in the 50 states of the U.S. The respondents would be hospital senior executives with titles such as Medical Director, Director Purchasing and Director of Quality Improvement. These senior hospitals executives are expected to be fully aware of the quality improvement initiatives being planned or implemented at their hospitals. The subjects of the study would be chosen from a paid hospital executive database owned by a reputed firm such that all major full-service hospitals and their senior executives are well represented in the sample. The key criteria used for choosing target respondents will be their senior management rank and/or quality related designations held in full-service U.S. hospitals. Emails will be sent to the identified respondents. The procedure to be used in this online survey is based on the Tailored Design Method by Dillman et al. (2008). Online surveys conducted using this method have traditionally achieved a high response rate.

The empirical study has planned the following steps to counter the validity related issues that may arise with the study. First, coverage error results if all members of the population under study do not have a known, nonzero chance of being included in the sample and if those excluded differ from those included (Andrews, Nonnecke, & Preece, 2003; Couper, 2008; Dillman et al., 2008; Singleton & Straits, 2010). The company claims that neither any hospital type, nor any geographic regions are excluded from the paid executive database and thus coverage error is not a significant issue in this study.

Second, sampling error occurs if only some, rather than all, members of the population under study are surveyed (Andrews et al., 2003; Couper, 2008; Dillman et al., 2008; Singleton & Straits, 2010). In this study, all executives and hospital administrators whose information is
present in the hospital executive database have an equal chance of being selected in the sample. Therefore, sampling error is not an issue.

Third, measurement error occurs when respondents give inaccurate answers to questions (Nunnally & Bernstein, 1994), which could be due to the poor question wording, survey mode effects, or any other aspects of respondent behavior (Andrews et al., 2003; Couper, 2008; Dillman et al., 2008). Careful attention has been given to make sure that the question wording is clear, concise and unambiguous. In the pilot study, respondents will be asked whether any question wording is ambiguous and necessary corrections will be made, if any issues are pointed out.

Fourth, in this study the research questions target all hospitals in the U.S. that offer full-service, which implies that they are not dedicated to providing only a particular medical procedure or treatment. A purposeful sampling will be used to target hospital senior executives from the paid hospital executive database of full-service hospitals for sending the online survey. Purposive sampling (Singleton & Strats, 2010) is used in any study to select a target group of informed respondents (Jack et al., 2013). Randomization is not applicable in purposive sampling and in this study the chances are that only senior level hospital executives will be selected. This is an advantage for the study since the senior executives could be expected to be fully aware of the constructs being studied and the suggested relationships among them.

Fifth, obtaining all data from a single source using self-reports has been expressed as common method variance (CMV) (Campbell & Fiske, 1959) and is a concern for the validity and reliability of the research results because if there are issues with the source it would affect more than one measure used in the study (Avolio, Yammarino, & Bass, 1991; Kaynak, 1997; Mitchell, 1985; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Podsakoff, MacKenzie, & Podsakoff, 2012; Podsakoff & Organ, 1986). In order to avoid this problem to the extent possible more than one respondent holding different ranks in the hospital hierarchy will be selected from the same hospital in the hospital executive database, but they would be counted only once as a sample. Having more than one respondent from the same hospital would allow a comparison of the responses from the same hospital. The aim is to verify if there is any systematic bias or if the questionnaire is being interpreted in a particular undesired manner by respondents belonging to a particular type of hospital.

Sixth, a disadvantage of online surveys is their low response rate compared to equivalent mail surveys (Couper, Blair, & Triplett, 1999; Solomon, 2001). A non-response bias may distort the reliability of the data, by under representing a few groups while over representing a few others (Alreck & Settle, 1985). In this study, although the respondents were selected at random there could be two groups—one, in which the respondents are trying their best to improve the quality of patient care at their hospitals but are experiencing no success in their efforts; and a second group could be containing those who refused to participate in the online survey. Therefore, to avoid reaching any faulty conclusions, non-response bias will be investigated.

Once the data are collected, frequency distributions and descriptive statistics will be calculated for all the variables in the research model and the assumptions of multivariate statistics will be tested. Correlations among research variables and discriminant and convergent validity and reliability for each scale will be checked.

This research contributes to operations and healthcare literature in the following ways. First, it offers an elaborate patient care quality construct that takes into account all the different aspects of quality of healthcare services that patients receive in hospitals. The results of this study may
bring out new insights of quality as perceived by hospital administrators and doctors. Second, the study highlights that hospitals, like most other manufacturing or service firms, may need to give importance to effectively consider interpersonal, environmental and administrative aspects of quality, which are often ignored, in addition to the technical aspect. Finally, from a methods usage in management research standpoint, the construct being empirically tested in this research attempts to capture all the different dimensions of these phenomena. This research aims to provide empirically tested valid and reliable measures for patient care quality that could guide future empirical research.

The study has implications for patients and medical practitioners as well. Patients in hospitals could greatly benefit from a focus of the healthcare system on the effectiveness, efficiency and total cost control of all individual processes, which would improve the quality of healthcare services that patients receive. Full-service hospitals across the U.S. may find it useful to include the often-ignored three dimensions of patient care quality in their efforts to improve the quality of admitted patient care.

Hospitals could provide high quality of admitted patient care if they give importance to all the four dimensions of patient care quality that are identified in the study, which would reduce medical errors and help them operate at the lowest cost and the highest level of efficiency (Byrnes, 2004; Shih, Rivers, & Soya Hsu, 2009; Singh, Rice, & Riquier, 2006). It is very crucial for all stakeholders that hospitals deliver high quality of admitted patient care because it could improve hospitals’ financials and help the admitted patients directly through better and more responsive medical care that cures them of their ailments quicker and at lower cost (Lee, Lee, & Schniederjans, 2011). We expect that the empirical study will result in valid and reliable measures of patient care quality that can guide future research in this area.

REFERENCES


