Accreditation Standards and Emergency Care: An Evaluation of Quality of Care in Emergency Departments of Accredited Public Hospitals in Saudi Arabia

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Abstract

This mixed-methods study focuses on the concept of quality of care and the standards of accreditation in emergency departments (EDs) in public hospitals in Saudi Arabia. The theoretical framework was underpinned by the Donabedian model positing that factors associated with structure, process, and outcome should be evaluated in order to determine the quality of a health care system. Accordingly, the overarching question addressed by this study was '*What is the relationship between the structure, processes and patient outcomes in emergency departments in accredited public hospitals in Saudi Arabia?* The five sub-questions are: *Do all accredited public hospitals in Saudi Arabia have the same ED structure? Is there a positive relationship between the* staff's *perceptions of the ED quality processes and the staff perceptions of the ED quality results? Is there a positive relationship between the* staff's *perceptions of the ED quality processes and ED quality process indicators? Is there a positive relationship between the* staff's *perceptions of ED quality processes and patient perceptions of quality of care? Is accreditation associated with better performance in ED quality process indicators?* In order to address these questions, empirical data were collected at four accredited public hospitals in three provinces (Hail, Qassim and Riyadh) in the three phases. Phase 1 involved the analysis of quantitative data obtained by administering a questionnaire to 277 hospital staff (nurses, doctors, and administrators). Phase 2 involved the thematic analysis of the qualitative data obtained by interviewing 11 patients who had attended the EDs. Phase 3 involved the analysis of quantitative data to evaluate Key Performance Indicators (KPIs) at the four hospitals based on the Canadian Emergency Triage System (CTAS).

The answers to the research questions are as follows. The results based on the analysis of the perceptions of the hospital staff contributed to the increased knowledge and understanding of the relationships between the structure, process and outcome dimensions of the Donabedian model with respect to EDs in Saudi Arabia. The four accredited public hospitals in Saudi Arabia did not appear to have exactly the same ED structures in terms of the quality of their human resources. The qualitative data provided by the patients and the quantitative data provided by the staff were only slightly consistent with respect to their perceptions regarding Human Resource Utilisation. Moderate to strong positive relationships were found between the staff's perceptions of the ED quality processes and the staff perceptions of the ED quality results. It was not possible, however, to prove that these relationships were causal. Weak positive relationships were found between the staff's perceptions of the ED quality processes and the

key quality performance indicators in different hospitals. The relationships between the staff's perceptions of ED quality processes and the patients' perceptions of the quality of care were difficult to determine due to (a) the different perspectives of the staff and the patients on the concept of quality of care; and (b) the possibility that the staff's and patients' answers to some of the researchers' questions may be contaminated by response bias No clear positive relationship was found between the staff's perceptions of the impact of accreditation and the measured ED quality process indicators.

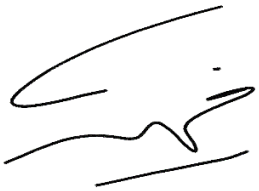
The conclusions of this study were enhanced by the strength of the mixed methods approach to address the overarching research question; however, the researcher was aware that external and internal validity issues may have an impact on the conclusions of this study. Despite these limitations, the empirical evidence points toward the need to further improve the quality of the care of patients attending EDs in accredited public hospitals in Saudi Arabia. Further improvement of the quality of care of patients in Saudi Arabia is consistent with the premises of the Saudi Vision 2030 to promote higher quality services, to ensure easier access to those services, to encourage a healthier lifestyle for citizens, and to address competency issues with professional staff. Recommendations for clinical practice are presented.

Future research should focus on evaluating the long -term impact on the quality of patient care in EDs, particularly with respect to the quality deficiencies identified in this study, including improvements in the infrastructure of ED facilities; reducing the waiting times and overcrowding of patients in EDs; prioritizing urgent cases in EDs; ameliorating staff shortages in EDs; preparing for unexpected events in EDs; rationalizing of the triage procedure in EDs; and increasing the participation of ED staff in continuous professional training.

Declaration

I hereby declare that this thesis contains no material that has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis and appendices.

Fahad Saud Alshammari



Dedication

First and foremost, I raise my hands to thanks the Great Lord, Allah my creator, my strong pillar, my source of inspiration, who gave me wisdom, knowledge and understanding. I owe it all to Almighty Allah for granting me the health and strength to undertake this long journey and enabling me to its completion.

I would like to dedicate this higher academic work to my father Saud, my mother Rafha, and my brothers and sisters, whose affection, love, encouragement and prayers day and night enabled me to achieve such success and honour.

I am deeply indebted to my family who provided hope and emotional support. A very special tribute of appreciation and gratitude geos to my wonderful wife, my beloved soul mate, Najah and to our children, my eldest son Abdul-Aziz, my daughter Aliyah, and my middle son Abdul-Elah, my youngest daughter Amira and my youngest son Abdullah for their invaluable support throughout this effort. Their constant inspiration, love, and patience were the keystone for my pursuit of the PhD degree.

Acknowledgement

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Acronyms

ACHS	Australian Council on Health Care Standards
AN	Anaesthesia Care
ANOVA	Analysis of Variance
ARAMCO	Arabian-American Oil Company
ASA	American Statistical Association
AVE	Average Variance Extracted
BC	Burn Care
CAEP	Canadian Association of Emergency Physicians
CARF	Commission on Accreditation for Rehabilitation Facilities
CBAHI	Central Board for Accreditation of Health Care Institutions
CBRs	Community Based Rehabilitation Centres
CCHSA	Accreditation Canada formerly Canadian Council on Health Services Accreditation
CCU	Cardiac Care Unit
CHS	Council of Health Services
CI	Confidence Intervals
CTAS	The Canadian Triage and Acuity Scale
DN	Dental Care
DT	Dietary Services
ED	Emergency Department
EMS	Emergency Medical Services
ER	Emergency Care
EP	Emergency Physicians
FMS	Facility Management and Safety
GDHA	Directorate-General for Health and Aid
GDMR	Directorate-General of Medical Research
GDP	Gross Domestic Product
GIA	General Investment Authority in Saudi Arabia
HCOs	Health Care Organisations

HIS	Health Information System
HM	Haemodialysis
HR	Human Resources
ICU	Intensive Care Unit
IHI	United States' Institute for Healthcare Improvements
IOM	Institute of Medicine
IPC	Infection Prevention and Control
IRB-KFMC	Institutional Review Board of King Fahad Medical City
ISO	International Standard Organization
ISQua	International Society for Quality in Healthcare
JCAHO	Joint Commission on Accreditation of Healthcare Organization
JCI	Joint Commission International
JCSC	Joint Commission Standard Compliance
KFSH-B	King Fahad Specialist Hospital-Buraidah City
KKH-H	King Khalid Hospital-Hail City
KSH-U	King Saud Hospital-Unaizah City
KPIs	Key Performance Indicators
KSA	Kingdom of Saudi Arabia
LB	Laboratory
LD	Leadership
L & D	Labour & Delivery
LOS	Length of Stay
MM	Medication Management
MLSD	Ministry of Labour and Social Development
MOE	Ministry of Education
MOH	Ministry of Health
MOI	Management of Information
MOMRA	Ministry of Municipal and Rural Affairs
MOT	Ministry of Transport
MR	Medical Records

MS	Medical Staff
MUHREC	Monash University Human Research Ethics Committee
NAM	National Academy of Medicine
NCQA	National Committee for Quality Assurance
NHS	National Health System in England
NICU	Neonate Intensive Care Unit
NR	Nursing Care
NTP	National Transformational Program
OR	Operating Room
ORT	Oncology & Radiotherapy
PC	Provision of Care
PDSA	Plan-Do-Study-Act
PFE/PFR	Patient & Family Education and Rights
PHCs	Primary Health Care Centres
PICU	Paediatric Intensive Care Unit
PIMs	Potentially Inappropriate Medications
PT	Physiotherapy Services
QM	Quality Management and Patient Safety
RD	Radiology Services
RS	Respiratory Care Services
SC	Social Care Services
TQM	Total Quality Management
USA	United States of America
US	United States
WBG	World Bank Groups
WHO	World Health Organization

Chapter 1: Introduction

1.1 Background to the Research Problem

This research study focuses on the concept of quality of care and the standards of accreditation in emergency departments in public hospitals in Saudi Arabia. The research was conducted at four accredited public hospitals in three provinces (Hail, Qassim and Riyadh). In chapter one, quality of care and accreditation are defined and the need for more research to evaluate the quality of care in the specific context of emergency departments in Saudi Arabia is outlined. Subsequently, the research problem, the research question, the theoretical framework, and the significance of the research are presented. The background issues outlined in the introduction are expanded in the literature review in Chapter 2.

1.1.1 Quality of Care

Healthcare organisations are complex systems and effective management is essential to significantly influence quality of care (Alkhenizan & Shaw, 2011; Parand, Dopson, Renz, & Vincent, 2014; Sharifi & Saberi, 2014; Swensen, 2019; Swensen et al., 2009). The definition of quality of care is challenging and over 100 definitions have been presented in the literature (Campbell, Roland, & Buetow, 2000; Donabedian, 2005; Hughes, 2008; Lohr, 1990; Mitchell, 2008). According to a World Health Organization (WHO) website entitled 'What is quality of care and why is it important' (WHO, 2019, p. no page number) the most broadly applied definition is 'the extent to which health care services provided to individuals and patient populations improve desired health outcomes'. The Institute of Medicine (IOM) defines quality of care more specifically in terms of six domains: safety, effectiveness, timeliness, efficiency, equitability and patient-centredness (IOM, 2001). Safety implies preventing actual or potential bodily harm to patients and providers. Timeliness implies minimizing delays to the delivery of healthcare. Effectiveness implies providing healthcare processes and achieving outcomes as

supported by scientific evidence. Efficiency implies maximising the cost effectiveness of healthcare delivery. Equitability implies providing health care of equal quality to patients who may differ in personal characteristics. Patient-centeredness implies meeting patients' needs and preferences for healthcare, including providing appropriate education and support. In order to satisfy these six domains, healthcare organisations all over the world must ensure accessible delivery of quality health services, act autonomously to meet patient expectations, and promote the standardisation of clinical practice (WHO, 2018, 2019).

The concept of quality of care is linked to patient satisfaction, defined very generally as the extent to which patients are happy with their healthcare (Stein, Day, Karia, Hutzler, & Bosco III, 2015). Patient satisfaction surveys have frequently been administered to provide an opportunity for healthcare managers and policy makers to gain a better understanding of patients' perceptions regarding the quality of healthcare delivery and services, and to provide information that contributes to improving quality of care. Feedback from patient satisfaction surveys may therefore be applied in practice to support the development of healthcare quality improvement plans (Al-Abri & Al-Balushi, 2014). The technical quality of the care delivered and the empathy of healthcare providers appear to be the most important predictors of patient satisfaction (Heath, 2019). However, obtaining valid and reliable data to measure patient satisfaction is extremely difficult in practice, and biased patient satisfaction surveys are considered to be a threat to the measurement of healthcare quality in emergency departments (Barrett & Schriger, 2015; Broadwater-Hollifield et al., 2014; Patwardhan & Spencer, 2012).

The concept of quality of care is linked to the concept of quality improvement, defined as 'the combined and unceasing efforts of everyone—healthcare professionals, patients and their families, researchers, payers, planners and educators—to make the changes that will lead to

better patient outcomes (health), better system performance (care) and better professional development' (Batalden & Davidoff, 2007, p. 1). Quality improvement projects are generally implemented by healthcare practitioners and researchers to solve problems in the health care system and to improve quality of care (Silver et al., 2016). Identifying priorities for quality improvement in emergency departments is important, to know how, when, and where to take action in order to remedy the deficiencies (DeWulf, Otchi, & Soghoian, 2017; Muntlin, Gunningberg, & Carlsson, 2006).

Batalden & Davidoff's (2007) definition of quality improvement implies that the transformation of a healthcare system is a very challenging task, involving many different participants and a wide of variety of tools are needed to measure several dimensions of quality of care. In his seminal article on assessing the quality of care, Donabedian (1988) stressed the need to clearly define quality of care based on how broadly responsibility for health is defined, whether maximally or optimally effective care is desired and defined by individual or social preferences. For the purposes of the current study care includes the care provided by the health practitioners within the ED and received by the patients. Given the focus is on accredited EDs throughout Saudi Arabia, the perspective is on optimally effective care that is determined by social preferences. This means that the definition of quality of care used in this study is the extent to which the emergency care delivered in Saudi Arabian EDs both satisfies the patients and achieves the expected standards of technical care, interpersonal care and ED amenities. It does not consider the impact of health service delivery on community health outcomes. More clearly, the definition of quality of care used in the current study is underpinned by the Donabedian model, predicting that improving the structure of a healthcare system results in quality improvements in clinical processes, which in turn enhance patient outcomes

(Donabedian, 2005). The Donabedian model, and the tools and measures used to evaluate structures, processes, and outcomes, are discussed in greater detail in Chapter 2.

1.1.2 Accreditation

Accreditation is a process that many healthcare systems apply to improve quality of care. Accreditation is recognised in over 70 countries as a process that enables healthcare organisations to achieve quality improvement in order to enhance the delivery of health services (Greenfield et al., 2014; WHO, 2013). The most broadly applicable definitions of accreditation include 'A voluntary program in which trained external peer reviewers evaluate a healthcare organization's compliance and compare it with pre-established performance standards' (Alkhenizan & Shaw, 2011, p. 407) and 'An internationally recognized evaluation process used to assess and improve the quality, efficiency, and effectiveness of health care organizations' (Nicklin, 2013, p. 1). Although the initial understanding of accreditation was as a voluntary process, it has now become mandated by various governments and funding agencies as assurance of the quality of care provided. This is the case in Saudi Arabia. The overall goal of accreditation is to help healthcare organisations understand what they are doing and the possible opportunities available for quality improvement. However, accreditation represents an additional cost burden, particularly to smaller healthcare facilities (Mumford et al., 2015). This burden implies that healthcare managers and policy makers need to conduct a cost-benefit analysis prior to accreditation. It may be necessary for smaller healthcare facilities in particular to evaluate the costs of alternative accreditation processes and to assess the extent to which expenditure on accreditation benefits an organisation's efforts to improve the quality of care.

1.1.3 Accreditation Standards

Accreditation is not only a process that aims ultimately to improve the quality of care, it also represents an official recognition of the satisfactory achievement of desirable standards by a

healthcare facility. Accreditation standards define the key functions, activities, processes and structures required for healthcare facilities to ensure the provision of an acceptable level of quality of care. Accreditation standards are considered necessary to promote high quality, reliable and safe products and services (Nicklin, 2013).

In the context of quality of care evaluation, an accreditation standard is defined as 'a desired and achievable level of performance against which actual performance is measured' and enables 'health service organisations, large and small, to embed practical and effective quality improvement and patient safety initiatives into their daily operations' (Accreditation Canada, 2011, p. 1). Accreditation entities establish and review their standards in different ways, including a board of experts, professional consultants, research, and regulations (Braithwaite et al., 2010; Greenfield et al., 2014). Chapter 3 includes a detailed discussion to explain how accreditation standards are set in Saudi Arabia, as well as the various international models. The similarity among the standards and processes used to achieve accreditation are also considered.

1.1.4 Impact of Accreditation

Healthcare organisations in Saudi Arabia and elsewhere have faced increasing pressure to ensure quality of care and quality improvement following the implementation of accreditation (Almutairi & Moussa, 2014). However, the effects of accreditation on quality of care are unpredictable and inconsistent. Brubakk, Vist, Bukholm, Barach, and Tjomsland (2015, p. 380) conducted a systematic review of previous studies on the impact of accreditation and concluded that 'Our review did not find evidence to support accreditation and certification of hospitals being linked to measurable changes in quality of care as measured by quality metrics and standards' and 'The strategies hospitals should implement to improve patient safety and organizational outcomes related to accreditation and certification components remains unclear'.

Many studies conducted outside Saudi Arabia have examined the impact of healthcare quality management initiatives, specifically the accreditation of health care organisations e.g., (Braithwaite et al., 2010; Corrêa et al., 2018; Devkaran & O'Farrell, 2015; Greenfield et al., 2014; Greenfield, Lawrence, Kellner, Townsend, & Wilkinson, 2019; Lam et al., 2018; Mumford et al., 2014; Pomey et al., 2010). They found consistent evidence that general accreditation programs improve the process of care provided by healthcare services.

The organisational and socio-cultural context in which accreditation takes place, how accreditation is managed and executed throughout the organization, and financial constraints may influence the dynamics of subsequent changes (Pomey et al., 2010). Although accreditation may generate an initial motivation for quality improvement, the long-term outcomes may take several years to develop (Devkaran & O'Farrell, 2015; Devkaran, O'Farrell, Ellahham, & Arcangel, 2019). For example, Greenfield et al. (2019) reported that longitudinal participation in accreditation programs over two cycles of accreditation between 2003 and 2010 was necessary to achieve an improvement in the continuity of patient care outcomes. The accreditation process may only promote quality improvement if organizational buy-in occurs, meaning that the feedback must align with the priorities of the healthcare organization (Desveaux, Mitchell, Shaw, & Ivers, 2017). Many other contextual factors may impact the sustainability of quality of care following accreditation (Corrêa et al., 2018). In the context of patient outcomes, Alkhenizan and Shaw (2011) reported the positive impact of accreditation to improve patient outcomes in certain subspecialties (e.g., sleep medicine, chest pain management and trauma management) whilst Lam et al. (2018) reported minimal benefits of accreditation to other patient outcomes (e.g., mortality and readmission). Improving patient satisfaction has become a major goal in all healthcare settings and accreditation may play an important role in improving patient satisfaction; however, the impact of accreditation on patient satisfaction is unclear (Almasabi, Yang, & Thomas, 2014).

In conclusion, although interest in accreditation is growing in hospitals throughout the world, there is limited published information on the sustainability challenges faced by new accreditation programs and the extent to which these programs have a positive impact on quality of care is unclear.

1.2 Research Setting

This research study was conducted in Saudi Arabia in 2017, where the general increase in the population in the last thirty years has resulted in rising demands to satisfy patients' health care needs and expectations. In a systematic review of studies conducted between 2009 and 2013, Almutairi and Moussa (2014) revealed that many contextual factors may have historically acted as barriers to improving the quality of care in Saudi Arabia, including patient factors (e.g., limited public health literacy, inadequate access to care, and socio-cultural issues), as well as provider factors (e.g., the rising costs of medical technology, and the increasing workloads and lowering job satisfaction levels of healthcare professionals).

Recent modernization and reform of the Saudi healthcare system have dramatically improved public access to healthcare in the 21st century (Gallagher, 2002; Walston, Al-Harbi, & Al-Omar, 2008). Reconfiguration of the healthcare system has, however, brought new challenges for Saudi healthcare organisations, their staff and other stakeholders, and has highlighted the need to improve the quality of care for Saudi citizens (Al Yousuf, Akerele, & Al Mazrou, 2002; Aljuaid, Mannan, Chaudhry, Rawaf, & Majeed, 2016; Almalki, FitzGerald, & Clark, 2011). Jannadi, Alshammari, Khan, and Hussain (2008) asserted that it is imperative to monitor the improvements in the Saudi healthcare system as this complicated reform goes forward into the future. However, there have only been three previous studies to evaluate the impact of hospital accreditation in Saudi Arabia (Algahtani, Aldarmahi, Manlangit Jr, & Shirah, 2017; Almasabi & Thomas, 2017; Alsakkak, Alwahabi, Alsalhi, & Shugdar, 2017). The findings of these

studies, which used different methodologies and different outcome measures, generally found improvement in staff perceptions of aspects of quality and the outcomes measured after participation in accreditation at a point in time. There was no evidence as to whether these improvements would be sustained. These studies are discussed in more detail in chapter 2.

1.2.1 Saudi Central Board for Accreditation

The Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI) was launched in 2005 to improve the quality of care in Saudi Arabia. The CBHAI is the official non-profit organization which has been authorized to grant accreditation certificates to all healthcare facilities operating in Saudi Arabia (CBAHI, 2018). The principal function of the CBAHI is to set the healthcare quality and patient safety standards against which all healthcare facilities are evaluated for evidence of compliance. The Saudi Ministry of Health (MOH) mandates CBAHI accreditation as a prerequisite for the renewal of the operating license of all public and private hospitals in Saudi Arabia. The current structures of the MOH hospitals in Saudi Arabia should therefore ideally be similar and they should implement the same CBAHI standards and processes. By 2010, the first hospital was accredited by CBAHI, followed by many hospitals in the following years (Almasabi & Thomas, 2017). However, Alkhenizan and Shaw (2011) suggested that CBAHI standards need significant modifications to meet the principles of the International Society for Quality in Healthcare (ISQua). The CBAHI standards meet only one criterion of the Quality Improvement principle, two criteria of the Patient/Service User Focus principle, four criteria of the Organizational Planning and Performance principle, one criterion of the Standards Development principle and two criteria of the Standards Measurement principle.

1.2.2 Emergency Departments in Saudi Arabia

The specific healthcare setting for this research is emergency departments (EDs) in accredited public hospitals supported by the MOH in Saudi Arabia. EDs are the front door to hospitals where patients are able to present themselves for clinical assessment and treatment. EDs occupy strategically important positions at the border between hospitals and their surrounding communities, offering care 24 hours a day, seven days a week to patients with both mental and physical health conditions, and linking patients to other appropriate providers and settings. Seow (2013, p. 61) defined the ED as an 'unique operation, optimized to exist at the edge of chaos'.

In the 21st century, EDs in Saudi Arabia have faced enormous challenges due to the need to provide care for increasing numbers of patients (Dawoud, Ahmad, Alsharqi, & Al-Raddadi, 2016; Khattab et al., 2019; Mahfouz et al., 2007; Rehmani & Norain, 2007). The efficient management of an ED requires a team of providers capable of correctly identifying patients' needs and maintaining patient flow in the face of limited resources. As the needs and flows of patients increase and resources become more limited, EDs in Saudi Arabia and around the world are becoming more challenged to provide a high level of quality of care defined in terms of safety, effectiveness, timeliness, efficiency, equitability and patient-centredness (IOM, 2007).

1.3 Statement of the Research Problem

Timely quality of care is difficult to achieve in EDs throughout the world, mainly due to overcrowding (Asplin et al., 2003). Historically, many EDs in Saudi hospitals have faced serious problems associated with overcrowding. Saudi patients have reported excessively long ED waiting times (> 3 hours), poor infrastructure, inefficient organization, and insufficient medical staff. (Al-Hindi et al., 2014). A recent survey indicated that ED waiting time is one of

the most important predictors of low patient satisfaction in Saudi hospitals (Abolfotouh et al., 2017).

The majority of patients who attend EDs in Saudi Arabia are non-urgent cases, resulting in delayed care for more acutely ill patients (Alyasin & Douglas, 2014; Dawoud et al., 2016; Khattab et al., 2019; Mahfouz et al., 2007). Many EDs in Saudi Arabia are required to care for more patients than they have been structurally designed for and have been staffed to accommodate. These problems may have resulted in increased morbidity and mortality, as well as decreased patient satisfaction (Bukhari et al., 2014; Dawoud et al., 2016; Househ & Yunus, 2014). Furthermore, barriers to quality of care in EDs in Saudi Arabia may be associated with the negative attitudes and beliefs of some providers towards efforts intended to improve quality of care (Wahabi & Alziedan, 2012). Hamam, Bagis, AlJohani, and Tashkandi (2015) recommended that wider public awareness of emergency services is required in Saudi Arabia in order to improve quality of care.

Policy makers, executives and managers of EDs should ideally give high priority to evaluate the extent to which quality of care is improving following an intervention (Schuur, Hsia, Burstin, Schull, & Pines, 2013), such as accreditation. However, no previous attempts have been made to determine if there has been an improvement in the quality of care in EDs in public hospitals in Saudi Arabia after their accreditation. Previous studies to evaluate the impact of hospital accreditation in Saudi Arabia (Algahtani et al., 2017; Almasabi & Thomas, 2017; Alsakkak et al., 2017) focussed only on hospital-wide indicators and not specifically on quality of care in EDs. This gap in knowledge and practice provides a direction and rationale for the current study, which attempts to address the following overarching question:

'*What is the relationship between ED structure, processes and patient outcomes in emergency departments in accredited public hospitals in Saudi Arabia?'*

1.4 Theoretical Framework

The stated overarching research question was underpinned by the Donabedian model (Donabedian, 1966, 1982, 1988, 2002, 2005). The Donabedian model was chosen because, for over 50 years, this conceptual framework has endured as the primary foundation for the evaluation of the quality of health care systems all over the world. Donabedian's works are frequently cited publications in the field of public health research (Ayanian & Markel, 2016). According to the Donabedian model, outlined in Figure 1.1, improvements in the structure of care should ideally lead to quality improvements in clinical processes that should in turn improve patient outcomes. Donabedian proposed that these three dimensions must be evaluated in order to determine the quality of a specific health care system.

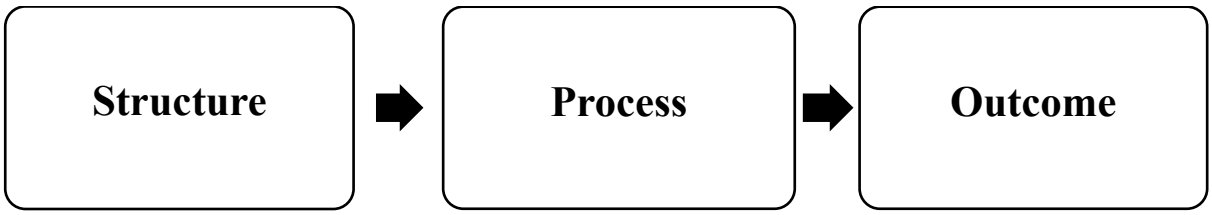

Figure 1.1: The Donabedian Model

Structure refers to the relatively stable elements that form the fundamental basis of a healthcare system, including the physical setting in which care is delivered, its facilities, equipment, and human resources. Processes include what is done in practice by the human resources healthcare systems to provide care, involving an evaluation of the appropriateness, acceptability, completeness, and competency of the interactions between patients and care providers. Outcomes refer to the results of health care practices and interventions, including improvements in the health status and the survival of patients. In order to support the Donabedian model, it must be demonstrated that changes in structure and process result in differences in outcome (Donabedian, 2005).

The Donabedian model assumes fundamentally that the statistical relationships between structure, process, and outcome are linear, although the linearity of these relationships has been questioned (Carayon et al., 2006). More recent research based on the statistical analysis of quality indicators has confirmed that positive linear correlations between structure, process and outcome can be applied in practice to assess the quality of healthcare systems (Ameh, Gómez-Olivé, Kahn, Tollman, & Klipstein-Grobusch, 2017; Kunkel, Rosenqvist, & Westerling, 2007; Moore, Lavoie, Bourgeois, & Lapointe, 2015; Rademakers, Delnoij, & de Boer, 2011). Positive correlations imply that healthcare systems that perform well in terms of structure also tend to perform well in terms of clinical processes, which in turn have a positive influence on patient outcomes.

The Donabedian model has previously been applied in practice to help assess the quality of care provided to ED patients in USA and Europe as well as to aid in recognising potential solutions to improve quality of care (Akachi & Kruk, 2017; Liu, Singer, Sun, & Camargo Jr, 2011; Rainer, 2015; Rhee, Donabedian, & Burney, 1987; Voyce, Gouveia, Medinas, Santos, & Ferreira, 2015). These previous studies provide the rationale for applying the Donabedian model in the context of evaluating the quality of care in EDs in Saudi Arabia.

The application of the Donabedian model requires researchers to measure structure, process and/or outcome dimensions from different aspects. These dimensions can be measured through (1) health professionals' points of view, (2) reported-quality indicators or/and (3) patient perspectives. Only one survey has evaluated clinicians' perspectives of quality of patient of care in Saudi Arabia. Almasabi and Thomas (2017) assessed the perceptions of 669 Saudi health professionals' regarding the evaluation of structure, process and outcome constructs at the hospital-wide level. The conclusion was that accreditation had a positive impact on the process and implementation of change in Saudi hospitals, resulting in improvements in the delivery of patient care and other health services.

Reported quality indicators, such as key performance indicators (KPIs) are also crucial and integral measures to evaluate quality domains in healthcare. One of the top priority indicators applicable to EDs is length of stay (LOS) (Schull et al., 2011). LOS is commonly viewed as an indicator of hospital efficiency and as a surrogate measure for costs. Hospitals with a long LOS may be inefficient in the use of resources, whereas those with a short LOS may be more efficient. However, LOS is not necessarily positively correlated with healthcare quality. If hospitals prematurely discharge patients, then a short LOS is indicative of a poor quality of care. Conversely the LOS may be extended if poor quality of care causes complications (Thomas, Guire, & Horvat, 1997). LOS is interrelated with other patient outcomes, which may affect the evaluation of healthcare quality. For example, while some hospitals may have a low average LOS, this may be due to high patient mortality associated not with efficiency, but with a poor quality of care (Lingsma et al., 2018).

Triage is a process that is critical to the effective management of LOS and other quality indicators in modern EDs (Aacharya, Gastmans, & Denier, 2011; FitzGerald, Jelinek, Scott, & Gerdtz, 2010). The Canadian Triage and Acuity Scale (CTAS) applies the concept of triage (a French term meaning 'to sort') to identify each patient's level of urgency in EDs and to treat patients in order of urgency, based on their triage level (Canadian Association of Emergency Physicians, 2018) (CAEP). In the last decade, triage has been implemented in Saudi hospitals in an attempt to more accurately define patients' expectations for timely care and to allow EDs to evaluate the patients' acuity level, resource needs, and performance using evidence-based key performance indicators and operating benchmarks (Al-Hindi et al., 2014; Alquraini, Awad, & Hijazi, 2015; Elkum, Fahim, Shoukri & Al Madouj, 2009; Elkum, Barrett & Al-Omran, 2011; Qureshi, 2010). The authors of these studies highlighted the need for more detailed research to evaluate the impact of triage systems on quality of care in EDs in Saudi Arabia. Therefore, it has become very important to evaluate the quality outcomes in EDs from the

patients' perspectives in this research in order to find unique evidence to improve quality of care in the future.

Only one previous study applied the Donabedian model as a framework for assessing the quality of care in emergency departments in Saudi Arabia. Mahfouz et al. (2007) concluded that emergency services were 'functioning reasonably well' in terms of the triad of structure, process and outcomes. However, no statistical analysis (e.g., correlation and regression) was conducted to identify the relationships between the three dimensions of the Donabedian model. Almasabi and Thomas (2017) also applied the Donabedian model to evaluate structure, process and outcome, but their survey of the impact of accreditation in Saudi Arabia was conducted at the hospital-wide level and did not focus directly on emergency services.

1.5 Research Questions

The overarching research question is *'What is the relationship between ED structure, processes and patient outcomes in emergency departments in accredited public hospitals in Saudi Arabia?'* underpinned by the Donabedian model, and the criteria outlined above to evaluate the quality of care in EDs. The overarching research question was divided into the following five sub-questions:

1. *Do all accredited public hospitals in Saudi Arabia have the same ED structure?*
2. *Is there a positive relationship between the* staff's *perceptions of the ED quality processes and the* staff's *perceptions of the ED quality results?*
3. *Is there a positive relationship between the* staff's *perceptions of the ED quality processes and ED quality process indicators?*
4. *Is there a positive relationship between* staff's *perceptions of ED quality processes and patient perceptions of quality of care?*
5. *Is accreditation associated with better performance in ED quality process indicators?*

1.6 Significance of the Research

The significance of this research is that: (a) it provides evidence, for the first time in Saudi Arabia, on the quality of care in emergency departments through the perceptions of health professionals; (b) it provides insight, for the first time in Saudi Arabia, into the relationship between quality processes for emergency care and accreditation through the evaluation of clinical indicator reports; and (c) it contributes to a better understanding of the patient perspective on care quality in the ED.

1.7 Thesis Structure

This thesis consists of eight chapters, the introduction to the study, the review of the literature, the health care system in Saudi Arabia, the research methodology and design, the quantitative results of Phase 1, the quantitative results of Phase 3, the qualitative findings of Phase 2 and the integrative discussion and the conclusions and recommendations. An overview of each chapter is given as follows.

Chapter 1: The introduction of this chapter clearly defines the concept of quality of care, accreditation, accreditation standards in the EDs of accredited public hospitals in Saudi Arabia. Then the national accrediting body CBAHI and the EDs in Saudi Arabia are discussed briefly. Lastly, the research problem, theoretical framework, research questions and significance of this research are also profiled.

Chapter 2: This chapter presents a structured narrative review of the published findings related to this study from different aspects. The Donabedian model is presented in this chapter and its quality dimensions 'structure, process and outcome' and their relationship with each other are reviewed critically. Different issues and the research designs and methods used in the previous studies are also detailed. Limitations and gaps in the literature are identified in this chapter.

Chapter 3: This chapter focuses on the healthcare system in Saudi Arabia. It begins with an overview of Saudi Arabia, the historical outline of health care in Saudi Arabia, the health insurance scheme and the challenges facing the healthcare system in Saudi Arabia. The next section in this chapter discusses the quality and accreditation of health care institutions in Saudi Arabia. Details of the accreditation standards and the survey process are presented. Lastly, an assessment of the Saudi accreditation standards, accredited hospitals, international accreditation and the Saudi vision is also given.

Chapter 4: This chapter focuses on the various methodologies used in this study and explains in detail the methodological characteristics related to this research. It includes a description of the research design, study context, study instrument, and the recruitment of the study participants. Detailed explanations as to how the data were collected, analysed and managed both in the quantitative and qualitative phases is presented. Ethical considerations are also described.

Chapter 5: The results of quantitative phase 1 are presented in this chapter. It provides a description of the demographic characteristics of the participants and study variables. There are seven quality variables measuring the participants' perceptions. The inferential analysis of the study questionnaire using Pearson Matrix Correlation between the variables and PLS-SEM analysis is presented and the variables between the participants are compared. Also, this chapter provides the results of quantitative phase 3. This section provides an analysis of the four key performance indicators (KPIs) based on the Canadian Emergency Triage System (CTAS). Length of stay, waiting time from registration of patient to physician, waiting time from decision to transfer to ICU and waiting time from decision to admit to ward are the ED KPIs which were analysed to compare the quality of the patient-centred programs in the EDs at four hospitals. It also shows the cross-tabulation of the CTAS levels versus compliance with the benchmark for the KPIs.

Chapter 6: In this chapter, the qualitative findings (phase 2) of the patient's interviews were analysed. A thematic analysis of the four primary themes, context, quality of care, satisfaction and messages to leaders was undertaken. The findings of this chapter, detailing the lived experiences of the interviewees in the EDs in the four targeted hospitals, are highlighted.

Chapter 7: This chapter provided an integrative discussion that deals with the key findings from phase 1, phase 2 and phase 3 and compares them with the findings from the literature review. This chapter provides evidence to address all the research questions and the theoretical implications of this research. The integration of the findings from the three strands (health professionals, ED quality process indicators and ED patients) illustrates the differences in their perceptions. Significant relationships between the quality variables, structure, process and outcome are explored using correlations between the variables.

Chapter 8: This final chapter presents the overall conclusions of this study. In this chapter, the strengths of this study are presented followed by a discussion of the limitations of this study. Recommendations for clinical practice and future research are provided.

1.8 Conclusion

The evaluation of the quality of care in EDs in Saudi Arabia through the examination the Donabedian model has become necessary. The quality dimensions of the Donabedian model, structure, process and outcome are essential components of the accreditation standards that can give more in-depth vision of how the daily quality activities in the accredited public hospital in Saudi Arabia are functioning. This chapter began with an overview of the study where the quality of care, accreditation and accreditation standards are defined clearly. Furthermore, the research setting, the Saudi accreditation body, research problem are discussed. This is followed by description of the study's theoretical framework, main research questions and sub-questions, the significance of this research and the thesis structure. The next chapter presents a structured literature review that provides a wide spectrum of the body of knowledge applicable to this study.

Chapter 2: Literature Review

2.1 Organisation of the Literature Review

This literature review begins with a brief overview of the current healthcare system in Saudi Arabia, including a critical review of the services provided by the Emergency Medical Services (EMS) in the last decade. The next four sections review the literature on the quality of care provided by EDs, underpinned by the Donabedian model (structure, processes, and outcomes) and what is currently known about the relationships between these variables. The sixth section considers methodological issues, focusing on how the quality of care in EDs and the impact of accreditation may be measured in practice, using key quality indicators and the perceptions of staff and patients. The final sections identify the gaps in the literature and the conclusion provides the direction and rationale for conducting more research to evaluate the quality of care in EDs in accredited public hospitals in Saudi Arabia, aligned to the research questions stated in chapter one.

2.2. Overview of the Current Healthcare Services in Saudi Arabia

Saudi Arabian citizens currently receive healthcare from different types of organisations. The Ministry of Health (MOH) is the major government agency managing public healthcare in both large cities and small towns. In 2017, the MOH provided about 60% of the total available health services to Saudi citizens. The MOH currently manages 282 hospitals (43,080 beds) and 2,361 Primary Health Care (PHCs) centres (MOH, 2017). Approximately 7% of the governments' 2018 budget, (52.3 billion SAR or $14 billion) was allocated to the public healthcare sector in 2018 (Colliers International, 2018). The private sector and other governmental agencies contributes to the remaining 40% of healthcare services in Saudi Arabia through for-profit hospitals, dispensaries, laboratories, pharmacies and physiotherapy centres located throughout the Kingdom of Saudi Arabia. However, this mixed model of healthcare management may not

be able to meet the population's health care needs into the future. The Saudi population is increasing by about 1% per year, projected to increase to over 45 million by 2050 (Worldometer, 2019). The rapid rise in the Saudi population is fuelling the demand for an improvement in healthcare services (Al Yousuf et al., 2002; Aljuaid et al., 2016; Almalki et al., 2011; Jannadi et al., 2008) and putting more pressure on emergency departments, as discussed in the following section. More details about the Saudi healthcare system and its characteristics are given in chapter 3.

2.3 Previous Studies of Emergency Medical Services in Saudi Arabia

The services provided by EDs in Saudi Arabia have been described using a variety of research methodologies. The results of ten surveys, conducted between 2007 and 2017, revealed that limited quality improvements have taken place in the last decade (Abolfotouh et al., 2017; Al-Hindi et al., 2014; Al Owad, Samaranayake, Karim, & Ahsan, 2018; Alyasin & Douglas, 2014; Dawoud et al., 2016; Hamam et al., 2015; Mahfouz et al., 2007; Elkum et al., 2011; Rehmani & Norain, 2007). However, most of the results lacked external validity because the data were obtained by non-random sampling from selected hospitals and the results were not necessarily representative of the Saudi population of EDs as a whole. Khattab et al. (2019) in a review entitled 'Emergency medicine in Saudi Arabia: a century of progress and a bright vision for the future' brought together the common threads that connected all previous evaluations of the emergency services in Saudi Arabia, based on a variety of different methodologies. The overall conclusion was that there is still an urgent need to reduce overcrowding and shorten waiting times in order to improve the quality of care for Saudi citizens. The following sections present a more detailed discussion on the structure, processes and outcomes of EDs based on studies conducted in USA, Europe, and Saudi Arabia.

2.4 Healthcare Accreditation

The common purpose of accreditation is that the quality of health services is standardised (Bohigas & Heaton, 2000). Public recognition of compliance with specific standards is formulised by the award of a certificate that serves to publicly acknowledge that the organisation is completely compliant with established standards (Bohigas & Heaton, 2000; Braithwaite et al., 2010; Shaw, 2000).

The value of healthcare accreditation remains unpredictable (Braithwaite et al., 2006) and this persists as a fundamental issue for governments, policymakers and researchers. Even so, the aims of accreditation—to contribute to a high quality of care and safety—have become clear. Therefore, many accreditation programs have been launched to that end (Giraud, 2001; Pomey et al., 2005; Mays, 2004). Accreditation programs, including Saudi Arabia's CBAHI program, attempt to undertake the main goal of continuous quality improvements by adherence to published standards in organisational and clinical settings (Braithwaite et al., 2010; Pomey et al., 2005).

In the Saudi Arabian context, quality initiatives, especially the accreditation system in public hospitals, are neoteric. In 2010, the first hospital in Saudi Arabia was accredited by the Central Board for Accreditation of Healthcare Institutions (CBAHI) (Almasabi & Thomas, 2017). By 2013, fifty-seven hospitals were accredited, and the number continues to grow (Almasabi, 2013). Healthcare organisations are facing pressure to become accredited by CBAHI or other authorities such as the Joint Commission International (JCI) and then to ensure a program of continuous quality improvement follows a successful accreditation (Devkaran & O'Farrell 2014).

2.5 Donabedian Model: Structure

Structure refers to the relatively stable elements that form the fundamental basis of a health care system, including the setting in which care is delivered, its facilities, equipment, patients, and human resources. Structure variables are all material objects, making them relatively easy to measure (Donabedian, 2002). Liu et al. (2011) defined the structure of an ED in terms of the quality of the physical environment, and the skill sets, distractions, and handoffs of care among the physicians and nurses. Rainer (2015) defined the structure of an ED in terms of the attributes of the patients (e.g., age, gender, and triage level). Voyce et al. (2015) measured nurses' perceptions of the quality of the structure of an ED. Akachi and Kruk (2017) suggested that data for measuring the structure dimension of the Donabedian model, including facility infrastructure, staffing and clinical training, should be derived from health-facility records and surveys. Seow (2013) suggested that the structure of an ED is defined by the resources available to ensure a high quality of time- and resource-intensive care. The ED physical environment in particular has an impact on the flow of care being delivered to patients. ED leaders and managers must therefore ensure that healthcare professionals work in a physical environment where sufficient resources are available to deliver the best care to their patients.

Only one previous study provided detailed observations on the structure of EDs in Saudi Arabia. Mahfouz et al. (2007) observed deficiencies in many aspects of the infrastructure of EDs at 30 health care organisations in the south-east region of Saudi Arabia that were indicators of quality of care. The structural elements included: (a) the optimal location of the ED on the ground floor of the hospital, near to the entrance; (b) the presence of a registry devoted specifically for emergency cases; (c) separate equipment devoted specifically for emergency services (e.g., cabinets containing appropriate drugs, nasogastric tubes, cannulas, catheters, tracheostomy sets, sterilization equipment; (d) the availability of support services, including X-ray facilities, medical laboratories, equipped ambulance vehicles; and (e) human resources

(e.g., number of nurses and physicians). Most of the physicians did not have postgraduate medical education, and they had not attended continuous professional development courses in order to acquire and develop the specific clinical skills required to practice in EDs. There was evidence to indicate a lack of essential structure (equipment, ambulances, and drugs) and resources were wasted.

Several studies focused on access to emergency services in Saudi Arabia, which is relevant because access is an element of the structure dimension of the Donabedian model. Hamam et al. (2015) interviewed 1534 members of the general public in Jeddah City which is the major urban centre and the largest metropolitan city in the western region of the Kingdom of Saudi Arabia, and concluded that most of the participants were unaware of the coverage of emergency services available in the region. A recommendation was made to increase the public awareness of emergency services in order to improve the community's quality of care.

Another study was conducted by Alyasin and Douglas (2014) which evaluated the reasons for 350 patients presenting to one ED in the Riyadh region, Saudi Arabia, over a period of 25 days. The most common reasons for the patients attending the ED were (a) not having a regular healthcare provider, and (b) the convenience of, and ease access to, medical care, including the ability to receive timely healthcare on the same day. The results of this survey indicated that many patients showed insufficient awareness of the specific role of the ED for emergency services, and there was a perceived lack of access to primary healthcare service outside the ED.

Dawoud et al. (2016) conducted cross-sectional surveys at the EDs in King Abdul-Aziz Hospital, King Fahad Hospital, and Al-Thaghor Hospital in November 2013. The survey focused on over-use by non-urgent cases. The sample consisted of 300 patients interviewed using a structured questionnaire. Most of the non-urgent patients were single, < 15 years old, and had lower incomes that the average. A high proportion of non-urgent cases perceived that

the ED was the first place to consult in case of illness because services and resources in primary health care centres were limited. Dawoud et al. (2016) recommended that new strategies and policies need to be implemented in order to reduce the use of EDs by non-urgent cases, as well as making public healthcare centres more accessible to the Saudi population.

2.6 Donabedian Model: Processes

Processes include what is actually done in practice by health care systems to provide care, involving an evaluation of the appropriateness, acceptability, completeness, and competency of the interactions between patients and care providers. Measurements of processes are less definite and are considered to be a lot more difficult to collect than measurements of structures and outcomes (Donabedian, 2002). It is evident that there are no standard methods of evaluating processes in EDs.

Liu et al. (2011) defined the processes in an ED in terms of the comfort levels of patients and the ability of physicians and nurses to observe, diagnose and provide therapy for patients in a timely and correct manner. Rainer (2015) defined the processes in an ED in terms of crowding, the time taken to initiate diagnostic tests, treatments and procedures, and the factors contributing to possible delays, using evidence based on the Joint Commission Standard Compliance (JCSC) (The Joint Commission, 2015). Voyce et al. (2015) measured nurses' perceptions of the quality of processes in an ED. Akachi and Kruk (2017) defined the process dimension of the Donabedian model in terms of the technical quality of the healthcare providers and the experiences of the patients receiving care, based on medical records and/or direct clinical observations.

Several studies have described processes within EDs in Saudi Arabia. Mahfouz et al. (2007) evaluated the processes in EDs at 30 health care organisations in the south-east region of Saudi Arabia. Data were collected from a sample of physicians using a self-report questionnaire to

assess their perceptions regarding emergency practices and their attitudes towards emergencies. Deficiencies in the processes included (a) many doctors did not consider the majority of cases as true emergencies; (b) most patients suffered long waiting times, and (c) work stress was identified among the ED staff. Recommendations were made to improve the quality of the emergency services in the region and to implement the mandatory monitoring of these services.

The survey conducted by Rehmani and Norain (2007) used administrative records to examine ED utilisation over a 3-year period at King Abdul-Aziz Hospital. The number of visits to the ED, the length of stay, and the number of patients requiring hospital admission increased during the study period. However, there were no changes in the proportions of patients in each triage category. The number of non-urgent cases did not decline over time. Recommendations were made to designate a 'fast track' system through the ED for the expeditious management of the most urgent cases.

Naser et al. (2011) reviewed 1206 patient records using the CTAS to evaluate the performance of one ED in Saudi Arabia. Triage involved the sorting of patients into an order of priority. The CTAS criteria was used to define patients' needs for timely care and to allow the researchers to assess ED performance against specified objectives or benchmarks (CAEP, 2018). They reported that time to triage, triage duration, the waiting time before being evaluated by a physician without being seen by a physician were found to be key indicators of ED performance. Recommendations were made to improve patient flow through the ED, based on the use of the CTAS.

Al-Hindi et al. (2014) also evaluated the effectiveness of the CTAS in Saudi Arabia. The sample consisted of 3,337 Saudi children visiting an ED during a 9-day period. Triage performance was analysed using key quality indicators, rates of admission, rates of referral,

observation duration, and the relationship between investigations requested and the CTAS level. The conclusion was that the CTAS system appeared to be effective for categorizing paediatric patients attending the ED, and that triage indicators are useful indicators of ED performance.

Al Owad et al. (2018) identified several factors related to the management of quality of care as well as the perceived waste of human and other resources that significantly affected patient flow through an overcrowded ED at Aseer Central Hospital in Saudi Arabia. Recommendations were made to design an integrated 'lean' methodology for improving patient flow. 'Lean' is a set of principles deigned to improve the overall value of a process stream, which may have certain beneficial effects on clinical practice and patient outcomes in healthcare systems (Rotter et al., 2017). However, a 'lean' methodology as a quality management tool is not generally popular in Saudi Arabia, The 'lean' approach is not closely linked to strategies and tactical operations in Saudi Arabian organisations and is not generally considered to be appropriate to support a quality culture, beginning with a quality vision and quality values, and ending in quality outcomes. Saudi managers and policy managers tend to limit their choices to a very limited range of quality management methods, tools, and guidelines (Abd-Elwahed & El-Baz, 2018).

2.7 Donabedian Model: Outcomes

Outcomes refer to the results of health care practices and interventions, including improvements in the health status and the survival of patients. Outcomes are concrete events that are relatively easy to measure (Donabedian, 2002). It is evident that there are no standard methods of evaluating outcomes in EDs.

Liu et al. (2011) defined the outcomes in an ED in terms of the quality of care, divided into:

a) Patient perspectives: (1) safety: 'adverse events/errors, morbidity, mortality', (2) effectiveness, (3) timeliness, (4) efficiency, (5) equitability, and (6) patient-centredness.
b) Hospital perspectives: (1) liability and (2) provider satisfaction.

Rainer (2015) defined outcomes in an ED in terms of timeliness of treatment and the prescribing of potentially inappropriate medications (PIMs). Voyce et al. (2015) measured nurses' perceptions of the quality of the outcomes in an ED. Akachi and Kruk (2017) defined the outcome dimension of the Donabedian model in terms of the data collected from patients regarding their quality of care during follow-up visits to their providers, as well as medical records (e.g., morbidity and mortality).

Two previous studies considered the outcomes of patients attending EDs in Saudi Arabia, based on the perceived levels of patient satisfaction. Mahfouz et al. (2007) evaluated the outcomes in EDs at 30 health care organisations in the south-east region of Saudi Arabia. Data were collected by interviewing a minimum of 10 patients at each hospital who had used emergency services in the last year. Most of the patients expressed moderate levels of satisfaction with several aspects of their care, including accessibility, continuity, informativeness, and thoroughness. Abolfotouh et al. (2017) conducted a longitudinal study of 390 adult patients who visited the ED at King Abdulaziz Medical City, Riyadh, Saudi Arabia to assess patient satisfaction using an interview questionnaire. About one-third of patients showed a high level of overall satisfaction, whilst about one quarter were not satisfied. Waiting time was identified as the only factor that could be significantly modified to improve patient satisfaction in the ED.

2.8 Relationship between Structure, Process, and Outcome.

Liu et al. (2011) proposed a conceptual model of an ED based on Donabedian's principles (Figure 2.1), where the obstacles related to structure (e.g., the physical environment and the skill sets of health professionals) may compromise the processes (e.g., patient observation,

comfort, diagnosis, and therapy). Weaknesses in structure and processes may ultimately lead to poor outcomes (e.g., the IOM's (2001) six components of quality of care, liability, provider satisfaction, profit/efficiency, and access) from the patient and hospital administrator perspectives. Voyce et al. (2015) used different statistical methods (specifically Cronbach's alpha, Steenbergen's similarity coefficients, and Friedman's test) to examine the relationships between the nurses' perceptions of structure, process, and outcome in an ED. The low alpha coefficients suggested that structure, process, and outcome were multidimensional. The similarity coefficients indicated confounding between the dimensions. The statistically significant Friedman test indicated that the nurses perceived that quality was more important to outcome than to process.

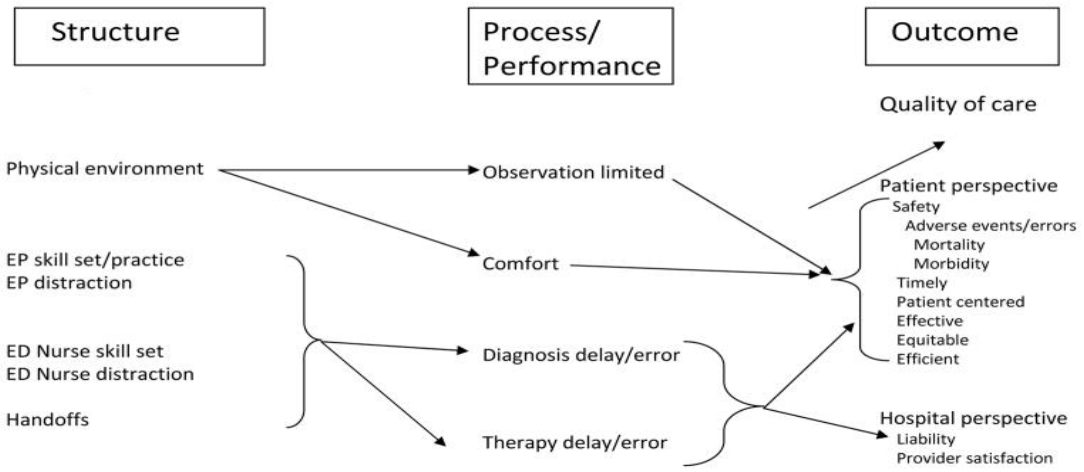

Figure 2.1: Conceptual model of an ED (Adapted from Liu et al., 2011, p.433)

EP= Emergency Physician

Research based on the statistical analysis of quality indicators has confirmed that positive linear correlations between structure, process and outcome can be applied in practice to assess the quality of healthcare systems. Rademakers et al. (2011) analysed patients' experiences regarding structure (waiting times, continuity of care), process (doctor–patient communication and information) and outcome (improvement or worsening of symptoms). Experiences

regarding process aspects explained most of the variance in the ratings (R^2 = 16.4–23.3%), followed by structure aspects (R^2 = 8.1–21.0%). Moore et al. (2015) evaluated the quality of care of patients treated in a Canadian healthcare system using key quality indicators. Structure and process were measured using accreditation criteria and expert opinion. Outcome was measured using rates of mortality, complications, and readmission as well as hospital LOS. Correlation was assessed with Pearson's correlation coefficients. Statistically significant correlations were found between structure and process (r = 0.33), and process and outcome (r = -0.33 for readmission, r = -0.27 for LOS). Ameh et al. (2017) found that the structure of public health care facilities was positively correlated (Pearson's r) with both process (r = 0.40) and outcome (r = 0.75) and that process was positively correlated with outcome (r = 0.88). A structural equation model was used to fit and validate the Donabedian's model, using unidirectional, mediation, and reciprocal path coefficients.

2.9 Limitations of the Donabedian Model

Donabedian's framework has been applied throughout the world by healthcare researchers for over 50 years, mainly because of its simplicity, its flexibility of application to different levels within diverse healthcare delivery systems (including EDs) and its provision of a theoretical foundation to examine the effectiveness of innovations designed to improve quality of care in clinical settings (Gardner, Gardner, & O'Connell, 2014). However, it is somewhat difficult to determine exactly which indicators of quality of care measured in practice are components of structure and/or process and/or outcome, because some of the indicators that constitute the three dimensions of the framework overlap with each other (Donabedian 2005). For example, is length of stay a process measure or an outcome measure? Some may consider 'distraction' in Lui's (2011) model structure, while it can also be related to processes. Furthermore, the Donabedian model does not incorporate all of the many complex factors that may ultimately determine the successful performance of healthcare organisations. Focusing only on a narrow

range of commonly used quality indicators to evaluate the relationships between structure, process, and outcome may be too simplistic (Carayon et al., 2006). Nissenson (2014, p. 1) argued that 'A new quality paradigm is needed to help guide clinicians, providers, and regulators to ensure that patients' lives are improved by the technically complex and costly therapy that they are receiving'. Consequently, in the 21st century, in order to predict and evaluate the quality of healthcare organisations, it may be necessary to devise a broader conceptual framework, positing relationships between more complex and comprehensive factors.

2.10 Methodological Issues

The methodological issues are considered with respect to the research designs that are appropriate to address the stated overarching research question 'What is the relationship between ED structure, processes and patient outcomes in emergency departments in accredited public hospitals in Saudi Arabia?' Only four previous studies have been conducted to evaluate the impact of accreditation on public hospitals in Saudi Arabia, and none of them focussed on emergency departments. Each study used a different methodology and all of the studies had limitations.

2.10.1 Pre-test and Post-test Research Design

Two of the studies used pre-test and post-test research designs to compare quantitative data collected before and after accreditation. The essential features of this design are that a dependent variable is measured in a sample of participants before and the participants are exposed to an intervention (the pre-test) and after exposure to an intervention (the post-test). Al-Awa et al. (2012) used international benchmarks for patient safety as the dependent variable before and after accreditation. The sample consisted of 605 registered nurses at King Abdulaziz University Hospital in Jeddah. Statistical analysis indicated a statistically significant post-

accreditation improvement in the perception of the culture of patient safety. Al-Sughayir (2016) investigated the impact of accreditation on hospital LOS which is widely recognized as a key indicator of the quality of care (Lingsma et al., 2018). Patient medical records were analysed to compare pre- and post-accreditation LOS at a general hospital in Riyadh, Saudi Arabia. Data obtained from a 12-month-post-accreditation period were compared with data from a 12-month-pre-accreditation period. Statistical analysis indicated that the mean LOS of the patients was significantly lower in the post-accreditation period compared to the pre-accreditation period. The conclusion was that accreditation reduces excess LOS and contributes to improving the quality of care.

2.10.2 Cross-sectional Surveys

Algahtani et al. (2017) conducted a cross-sectional survey by administering a questionnaire consisting of 19 items using 5-point Likert scales covering the participants' perceptions of accreditation, including the benefits of accreditation and the quality of the outcomes of accreditation. The survey data were collected from 901 healthcare professionals, including physicians, nurses, medical technologists, and dietitians at King Abdulaziz Medical City in Jeddah. The results indicated that the participants generally perceived that accreditation had a positive impact, resulting in improvement in the delivery of patient care and other health services.

2.10.3 Mixed Methods

Almasabi and Thomas (2017) used a mixed methods approach to evaluate post-accreditation quality of care. Quantitative data were collected using a questionnaire. Qualitative data were collected using semi-structured interviews. Survey data were collected from 669 healthcare professionals at three accredited public hospitals and 12 senior managers were interviewed. Although some immediate improvements in the perceptions of the participants regarding the

quality patient care after accreditations were revealed, there was no evidence to determine if these improvements could be sustained in the long-term. The advantage of the mixed methods approach in healthcare research is that the data can be integrated and interpreted to answer a broad range of research questions, the strengths of one method can be used to overcome the weaknesses of another method, and insights may be generated that may otherwise be missed by using only one method (Fetters, Curry, & Creswell, 2013).

2.10.4 Limitations of the Methodologies

The interpretation and conclusions drawn from the results of the pre-test and post-test research designs, e.g., (Al-Awa et al., 2012; Al-Sughayir, 2016) may be misleading for the following reasons. These simple types of pre-test post-test designs have been heavily criticised in the methodological literature because they provide only limited statistical evidence to support claims regarding the effectiveness of interventions implemented in a clinical setting. Evaluation of the changes in a dependent variable (e.g., perceptions of healthcare professionals, and the LOS in the ED) between a pre-test and post-test without the use of controls or randomization may generate misleading results. The results may be biased by inflated effect sizes and may be confounded to numerous threats to internal validity because it is impossible to determine the influence of intrinsic and external factors that were not observed by the researcher (Knapp, 2016; Marsden & Torgerson, 2012; Spurlock, 2018). Other sources of bias (e.g., the regression effect) associated with random measurement error may also cause misinterpretation of the changes in a dependent variable between a pre-test and a post-test, (Weeks, 2007). Furthermore, the integrity of the results of pre-test and post-test designs may be confounded by the Hawthorne effect. The participants in a clinical setting may only improve their behaviour and/or react positively to an intervention because they are aware that they are engaging in an experiment. If the participants did not know that they were being observed, then they would not react in the same way (McCarney et al., 2007).

Studies based on the post-accreditation analysis of self-reported questionnaire data, e.g., (Algahtani et al., 2017; Almasabi & Thomas, 2017) also suffered from limitations which may have resulted in misleading conclusions. The data were collected using convenience samples at selected institutions which were not necessarily representative of the entire Saudi population. No comparisons were made across the large number of other accredited hospitals in Saudi Arabia and therefore the results had limited external validity. No evidence was provided to determine if the perceived improvements in quality of care could be sustained across multiple accreditation cycles. Furthermore, there were several issues regarding the validity and reliability of the self-reported data which were not analysed. Self-reported perceptions are not necessarily factual because the respondents may answer carelessly or they may sometimes deliberately or unconsciously distort the truth, known as response bias. On average, between 5% to 15% of respondents provide careless answers to survey questions (Meade & Craig, 2012). Choi and Pak (2012) identified a total of 48 sources of bias in self-reported questionnaire data administered in clinical settings. Furthermore, there is a tendency for some Arab respondents to consistently agree with all of the items in an interview or questionnaire survey, irrespective of whether or not they actually agree in reality. This peculiar form of cultural communication style called extreme or acquiescent response bias, may sometimes be a threat to the validity and reliability of self-reported data collected from Arab participants (Baron-Epel, Kaplan, Weinstein, & Green, 2010; Benstead, 2018; Harzing, 2006; Smith, 2004).

No data have yet been collected to assess the impact of accreditation on patient satisfaction in Saudi hospitals. However, obtaining valid and reliable data to measure patient satisfaction is extremely difficult in practice and biased patient satisfaction surveys are considered by some researchers to be a threat to the measurement of healthcare quality in emergency departments (Barrett & Schriger, 2015; Broadwater-Hollifield et al., 2014; Patwardhan & Spencer, 2012).

2.11 Gaps in the Literature

Many different methodologies have been applied and there are no standard methods of evaluating the structures, processes and outcomes in EDs. Knowledge and understanding of many of the structural elements of EDs in Saudi Arabia are limited. More information is required to evaluate the different types of physical amenities and equipment on offer to patients, and to assess the numbers, training, skills, remuneration, and qualifications of the nurses and physicians who are competent to deal with emergency cases at the primary care level. There is greater knowledge and understanding of the process dimension of the Donabedian model in EDs in Saudi Arabia; however, the results suggest deficiencies in the quality of care in EDs that need to be addressed, associated mainly with overcrowding and understaffing. Little is known about the outcomes of EDs in Saudi Arabia using medical records or based on the perspectives of the staff and the patients. Health care policy-makers in Saudi Arabia need to gain a better understanding of the factors associated with the dimensions of the Donabedian model and the relationships between them in order to satisfy the urgent need to reduce ED overcrowding and shorten waiting times and thereby improve the quality of care for Saudi citizens in accredited public hospitals.

The gaps in the knowledge outlined above provide the direction and rationale to conduct more research on EDs in accredited public hospitals in Saudi Arabia. Consistent with the definition of quality of care used in this study which is, 'the extent to which the emergency care delivered in the Saudi Arabian EDs both satisfies the patients and achieves expected standards of technical care, interpersonal care and ED amenities', there is a need for data from the perspectives of healthcare professionals and patients as well as outcome measures. This is best accomplished using a mixed-methods approach exploring the structure of the EDs, the relationships between ED processes and key quality indicators and the long-term impact of the CBAHI accreditation process on key quality indicators.

2.12 Conclusion

In the literature, numerous articles related to the quality of care especially in EDs in healthcare organisations have been reviewed extensively. Previous studies in Saudi Arabia were presented in this literature review indicating that there is a need to improve quality of care in EDs. The conceptual model used in this study, which consists of the structure, process and outcome variables and their relationships with each other were reviewed in this chapter. Limitations of the Donabedian model, methodological issues, pre- and post-accreditation research designs, cross-sectional surveys and mixed methods studies were critiqued and discussed in the literature review. In the last section, the gaps in the literature were presented clearly. The next chapter is a comprehensive description of the healthcare system in Saudi Arabia.

Chapter 3: Healthcare System in Saudi Arabia

3.1 Introduction

The previous chapters examined the existing literature regarding the healthcare quality of EDs from different aspects. This study is focused on patient care quality and the accreditation of the EDs in public hospitals in Saudi Arabia. It is valuable to provide summary data related to the Saudi healthcare system, including the background of quality of care and accreditation, and how the Saudi Arabian healthcare services are provided through different public and other governmental agencies. There are four parts in this chapter. First, an overview of the Kingdom of Saudi Arabia is provided. The second part comprises detail of different aspects of the healthcare system, including Saudi's health structure and challenges. Then, quality of care strategies and challenges are summarised. Finally, accreditation systems, assessment in healthcare organisations and Saudi Vision 2030 is discussed.

3.2 Overview of Saudi Arabia

As illustrated in Figure 3.1 geographically, Saudi Arabia occupies most of the Arabian Peninsula, with the Red Sea to the west, the Persian Gulf to the east, and Yemen to the south. The entire length of its land borders is 4,431 kilometres: Jordan 744, Iraq 814, Kuwait 222, Qatar 60, the United Arab Emirates 457, Oman 676, and Yemen 1,458. The kingdom of Bahrain is an island in the Persian Gulf that is connected to the Saudi mainland by a causeway. By far, Saudi Arabia is the largest country on the Arabian Peninsula, covering approximately a size of 2,149,690 km2 (GCS, 2019).

Figure 3.1: Map of Saudi Arabia

Source: General Commission for Survey (2018).

In 1744, the first Saudi state was created near the region of Riyadh. The founder of the Kingdom of Saudi Arabia, Abdul-Aziz, captured Riyadh in 1902 and began his efforts to unify the many factions on the Arabian Peninsula (Almasabi, 2013).

3.2.1 Culture, Customs and Religion in Saudi Arabia

The place-birth of Islam, Saudi Arabia is a very conservative country that is steeped in historic Arab customs and Islamic teachings. Saudi Arabia is rich in historical places, including the two holiest sites in all of Islam: The Prophet's Mosque in Medina and the Grand Mosque in Mecca (Almasabi, 2013). Since Islamic law is strictly enforced in Saudi Arabia, visitors should note that there are many customs, laws and cultural rules. It is preferable for females to wear loose,

modest clothing as well as a headscarf and full-length cloak. Men should wear long pants and long-sleeved shirts at all times.

The philosophy, behaviour, social traditions and language of Saudi Arabia are all shaped by Islamic practice. Rassool (2000) stated that Muslims believe illness is a recompense for sins committed rather than a punishment from Allah (the Arabic name of God). They further believe that death, illness and health all derive from Allah. Muslims are advised to strive for therapy and care during illness; however, as Rassool (2000) suggests, health professionals believe that this may cause problems if Muslims do not play an active role in solving their health issues. Islam encourages people to promote health and a healthy lifestyle by engaging in exercise, eating moderately, breastfeeding, practicing personal hygiene and avoiding alcohol intake, substances and tobacco (Rassool, 2000).

3.2.2 Demographics of Saudi Arabia

While studying the Saudi Arabia health care system, it is necessary to highlight the demographics (Almasabi, 2013). It is a significant matter to understand how the government does its duty and carries out its responsibilities in relation to the allocation of resources to meet the needs of its citizens (Almasabi, 2013).

3.2.2.1 Population

The Saudi population, as noted, was 33.4 million in 2018, comprising two-thirds Saudi citizens and one-third non-Saudis, generally migrant workers (approximately 11 million non-nationals who live in the country legally for work or other purposes) (MOEP, 2019). The population is therefore skewed, as shown on the pyramid (Figure 3.2).

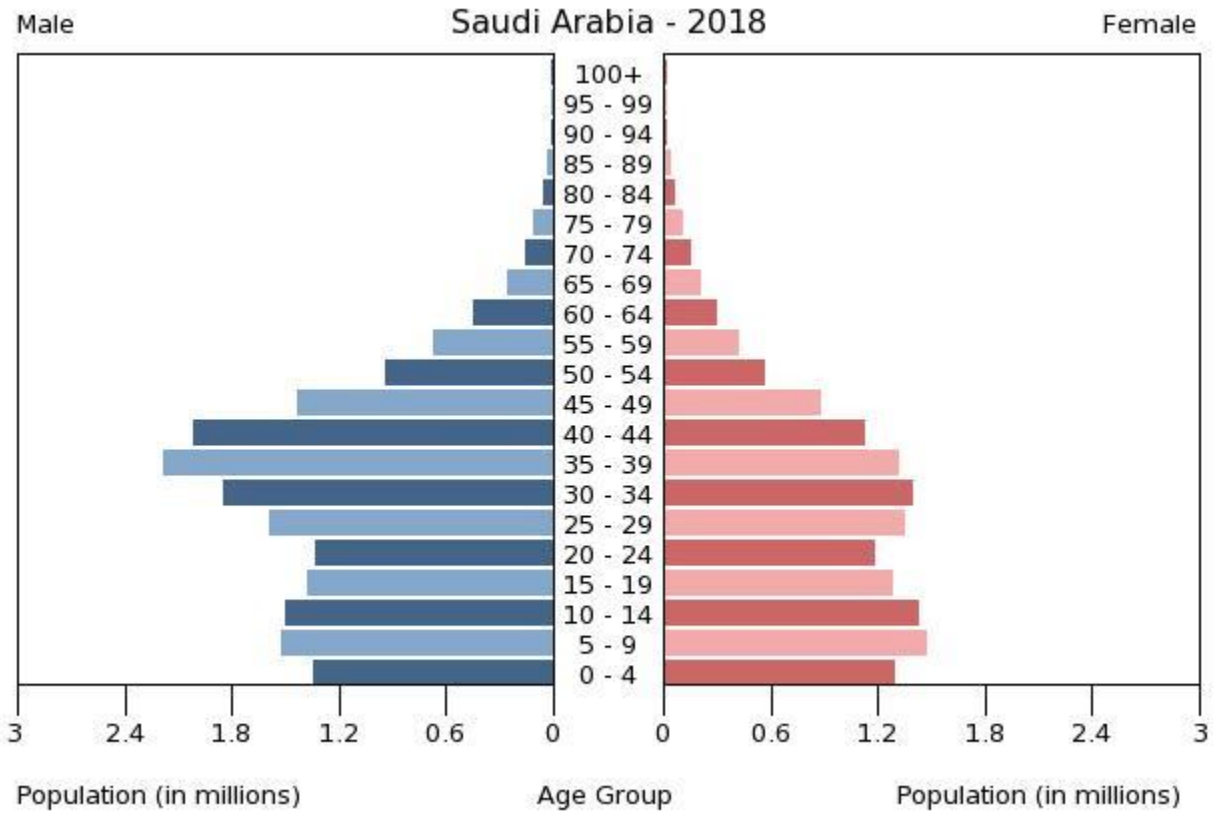

Figure 3.2: Saudi Population Pyramid

Source: General Authority for Statistics (2019)

The population structure has a significant influence on the type of healthcare provided in the country. As the figure shows, males significantly outnumber females due to the non-Saudi population. However, there is an increase in the female Saudi population aged 25 years to 44 years. Babies born in the last quarter of the 20th century are therefore boosting the Saudi population, as seen in the children's profiles (GaStat, 2019).

The largest provinces are Riyadh (2018 population 8.4m, 3.7m Saudi), Makkah (includes Jeddah City, 8.8m, 4.6m Saudi) and Eastern (includes Dammam City, 5m including 3.2m Saudi) The average annual population growth rate for 2019 was 2.4%. (GaStat, 2019). This is the 80th highest growth rate in the world (GaStat, 2019).

3.2.3 Socio-Economic Development in Saudi Arabia

Saudi Arabia has the second largest oil reserve in the world and is commonly regarded as the world's most important producer of oil. The Saudi economy has remained dependent on oil revenue and finances have been directly correlated with the country's oil income (Almasabi, 2013). The oil and gas sector accounts for about 50% of the gross domestic product (GDP) and about 70% of export earnings. Apart from petroleum, the Kingdom's other natural resources include natural gas, iron ore, gold, phosphate and copper (Dincer, Hussain, & Al-Zaharnah, 2004). The government's social spending has also been directly linked to the price-led oil revenue. Saudi's plentiful economic growth enables the government to implement and expand healthcare facilities around the country (Jannadi et al., 2008). Saudi Arabia's new leadership vowed to commence comprehensive and transformative reforms that encompasses a wide range of socio-economic reforms, which include sustainable health care services around the country (Alharbi, 2018).

3.3 Historical Overview of Healthcare in Saudi Arabia

In 1926, a Health Department was established by the Saudi government (Mufti, 2000; Yusuf, 2014), which marked the beginning of an organized healthcare system in the Kingdom (Albejaidi, 2010). In order to continually improve the organisation and efficiency of the fledgling healthcare system, the Health Department (later called the Directorate-General for Health and Aid) was attached to the Bureau of the Attorney General (Albejaidi, 2010; Mufti, 2000). Such initiatives were challenged by limited finances prior to 1946, which made the model of a western style healthcare system difficult to achieve. For example, in that time, only 300 hospital beds were available for the entire country (Mufti, 2000). By the 1950s, the cities of Mecca, Medina, Jeddah and Taif acquired hospitals of over 1000 beds and healthcare clinics were also established in Riyadh and Al-Hasa (Khoja & Saleem, 2001).

The MOH was established by virtue of a Royal decree No. 5/11/8697 in 1915. By the 1970s, growing public revenues from oil production and exports were used to finance the national development plans for strategic establishments (Aarts & Nonneman, 2005). Later, there was prodigious expansion in the healthcare services, with human resource employment plans aimed at educating and training the Saudis to become skilful professionals (Saati, 2000). Such plans were multi-faceted which include sponsoring scholarships, establishing medical schools and a Saudi Council for Health Specialties, focusing on the improvement of health professionals (Al-Rabeeah, 2003) Consequently, Saudi Arabia is currently ranked 26 of 190 countries on the WHO's measurement of healthcare system performance (WHO, 2000).

3.3.1 Structure of the Healthcare System in Saudi Arabia

The Saudi Arabian government is committed to providing all types of health services free of charge to every Saudi citizen as endorsed by the Saudi constitution, Article 31 (Aldossary, While, & Barriball, 2008; Jannadi et al., 2008). Article 31 of the state constitution declares, 'The state takes care of health issues and provides healthcare for each citizen'. According to this statute, the citizens have full and free access to all types of public health services (Jannadi et al., 2008; Saudi Arabia's Constitution, 1993). The government operates about 80% of healthcare organizations via the MOH and other self-governing health agencies, and 20% are run by the private sector (Almasabi, 2013). The MOH is the largest national entity responsible for providing health care services to the citizens through 20 Directorate-Generals of Health Affairs (DGHA), which are distributed across 13 administrative provinces all over the country. The MOH is entrusted with the provision of preventive, curative and rehabilitative health care in the kingdom at the primary, secondary and tertiary levels (Almasabi, 2013; Jannadi et al., 2008; Mufti, 2000).

3.3.2 Healthcare Hierarchical Levels

The MOH provides around 60% of healthcare services at three levels: primary, secondary, and tertiary. The referral to other healthcare organizations is via primary healthcare services, whereas secondary and tertiary healthcare services are provided in general and specialist hospitals, respectively.

3.3.2.1 Primary Healthcare

Saudi Arabia was a signatory of the 1978 Alma-Ata Declaration, which placed emphasis on the provision of primary care to achieve the WHO's goal of health for all by 2000. Primary health care provides preventive, curative and promotive therapies via primary healthcare centres (PHCs) across the country (MOH, 2017). There are 2,361 PHCs with modern medical equipment and qualified health staff distributed among the administrative provinces and supervised by the Division of Public Health at each regional Directorate-General of Health Affairs (DGHA) (MOH, 2017). These PHCs provide basic healthcare services such as vaccinations, dental care, maternity follow-up and medical education for chronic disease patients.

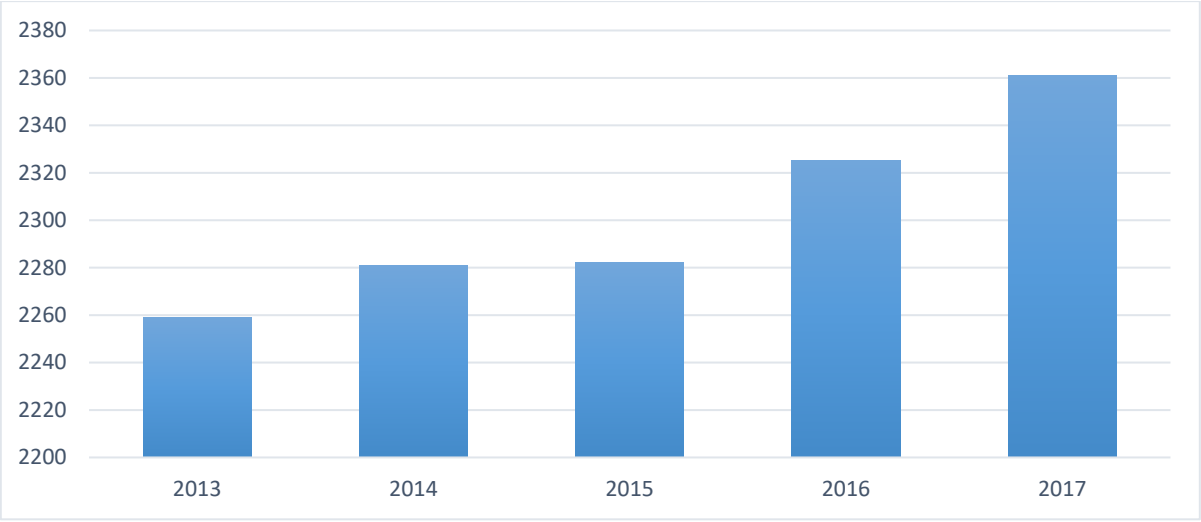

Figure 3.3: Number of Primary Healthcare Centres in Saudi Arabia

Source: MOH (2017).

3.3.2.2 Secondary Healthcare

At the secondary care level, the patients are referred by primary care physicians to the nearest general hospital in the same geographical area (Almasabi, 2013). These hospitals are under the supervision of the Division of Curative Medicine Affairs in the regional health directorates (MOH, 2017). Of the 282 hospitals that belong to the MOH, 223 of them are ranked as general hospitals with a total of 31329 beds. The construction of new hospitals is increasing with time and population growth (Albejaidi, 2010).

Table 3.1: Hospitals and Health Professionals' Distribution in the Public and Private Sectors

Category	MOH	Other Gov't. Agencies	Private Sector	Total
Hospitals	282	47	158	487
Beds	43080	12279	17622	72981
Physicians	46605	17629	33840	98074
Nurses	103990	35808	45895	185693
Ancillary Health Personnel	63499	32518	44156	140173

* Include medical cities. * Include dentists.
Source: (MOH, 2017).

3.3.2.3 Tertiary Healthcare

Special cases that need advanced medical attention such as cancer, radio-chemotherapy and organ transplantation are transferred to the tertiary care level at advanced centres, specialist hospitals or medical cities (Jannadi et al., 2008). The medical city is a large medical complex and consists of more than one or different medical facilities inside the medical city campus. It is categorised as tertiary level care providing all types medical and surgical therapies.

3.4 Health Insurance Scheme

The new strategy of funding health services in Saudi Arabia aims to confront the challenges facing the current system by introducing Health Insurance and the Health Service Procurement Program (MOH, 2017). The program is divided into three main phases: strategic purchase of health care services, evaluation of health cost-based risks, and facilitating a restructuring of KSA's network of healthcare providers (MOH, 2017). The transition to a national health insurance program is expected to reduce the government's share of healthcare expenditures by beginning wage-based contributions to healthcare premiums (Alharbi, 2018).

Further, the Cooperative Health Insurance Council was created in accordance with the provisions of Article (4) of the Law which was established by the Council of Ministers Resolution No. 71 in 1999 (Almalki et al., 2011). The Cooperative Health Insurance Council is responsible for supervising the implementation of the cooperative health insurance system which aims to provide health care and organise it for all private sector employees and their families (Almalki et al., 2011). Substantial progress has also been made in providing modern healthcare insurance facilities to expatriate residents and Saudi citizens who are working in private sectors, most notably through the Cooperative Health Insurance Scheme (Alharbi, 2018). The beneficiaries are subject to articles and regulations specified in Saudi health insurance law (Rassool, 2000).

3.5 Challenges Facing the Healthcare System in Saudi Arabia

Despite the fact that the Saudi government has taken serious steps to reform the healthcare system, there are challenges within the available healthcare services (Alharbi, 2018). Different issues exist and were identified by MOH in relation to the annual increase of health expenditures. Saudi Arabia spends about 4.7% of GDP on health and from 6% to 7.25% of the government budget on health (Alharbi, 2018) The government also provides immediate support to the MOH through developmental plans, in which the funds allocated to MOH rapidly increase (MOH, 2017). Notably, the Saudi government's spending is higher than the regional average as well as more than the average for countries which have similar level of development (Alharbi, 2018).

The main reason for the increasing expenditure is population growth. Although the reason for rising costs is that health services are free for all Saudis, this has created long waiting lists in EDs (Jannadi et al., 2008). Also, the low number of Saudi healthcare workers is a significant issue that has been a challenge for the Saudi government for decades (Alharbi, 2018). More than half of the healthcare providers in Saudi Arabia are expatriates which results in an unexpected or probable turnover of staff at any time (Alharbi, 2018). In 2017, Saudi physician and nurses represented 35.9% and 57.9% of the total workforce in the MOH respectively (MOH, 2017).

Another challenge facing the government is that around five million pilgrims visit Saudi Arabia to fulfill the Islamic ritual 'pilgrimage' every year (Almasabi, 2013). Pilgrims come from dozens of countries around the world to practice their worship in the holy cities of Mecca and Madinah in Saudi Arabia (MOH, 2017). Many people from all over the globe gather in this area which means the chance of transmittable disease affecting the population is very high (MOH, 2017). Large and comprehensive plans are required to ensure sufficient housing, transportation and health services for those pilgrims (Jannadi et al., 2008). There is great

pressure on MOH to provide all types of necessary healthcare services free of charge to pilgrims (Almalki et al., 2011). For example, MOH established 25 hospitals, 8 of which are seasonal hospitals (MOH,2017). There are also 154 health centres in Mecca city, 112 of which are seasonal (MOH, 2017). A total of 4680 hospital beds are available with a rate of one bed per 505 pilgrims. On average, each health centre serves 15372 pilgrims (MOH, 2017). The total number of personnel serving in all the healthcare facilities in the Hajj season is 29275 (MOH, 2017).

Notably, Saudi Arabia has had the highest road traffic accident rate in the world due to lack of punitive action against drivers who violate traffic rules (Ansari, Akhdar, Mandoorah, & Moutaery, 2000). This is considered a major challenge for the Saudi government in the last two decades. Ansari et al. (2000) stated that around 20% of Saudi hospital beds are occupied by casualties of motor vehicle accidents and 81% of mortalities are a result of road accidents. Another study conducted by Mansuri, Al-Zalabani, Zalat, and Qabshawi (2015) reported that road accident injuries had resulted in 86,000 deaths and 611,000 injuries with 7% of injuries leading to permanent disability in the last two decades. In recent years, the government estimated that the cost of road accident injuries was around 7 billion Saudi Riyal (nearly US $ 1.7) (Mansuri et al., 2015).

According to Mufti (2000), poor coordination and eligibility of care access between healthcare organisations due to lack of planning and management was another substantial challenge. This lack of medical collaboration between some healthcare facilities was due to the underuse of sophisticated equipment and technology (Mufti, 2000).

3.6 Overview of Quality and Accreditation in Healthcare Organisations, Saudi Arabia

By 1970, the Saudi Arabian government had taken zealous steps to improve healthcare services across the country (Almasabi, 2013). Since that time, Saudi Arabia has concentrated on

improving the quality of the health services provided by the health sector (Almasabi, 2013). With the expansion of both public and private sectors, both patients and decision makers are demanding high-quality medical care. Therefore, total quality management (TQM) programs were implemented to maintain the quality of health services in light of the accelerating growth of health projects all over the country (Almasabi, 2013).

In recent years, developing countries began adopting accreditation programs and Saudi Arabia was one of the first Arab countries to implement accreditation (Almasabi, 2013). In 1993, the MOH in collaboration with WHO established a National Committee on Quality Assurance (NCQA) program to measure the quality of health services according to specific guidance on the scope of practice for primary health care (Almasabi, 2013). Later, in 1995, the same NCQA program also started a new activity related to the development of management. Leaders underwent training programs to enhance their effectiveness and efficiency levels in their daily routines at primary health care centres. Year after year, many agreements were made and programs designed to enhance the quality of health services through determined standards for the utilisation of resources in different hospitals in the kingdom. The objective behind these initiatives was to meet the criteria for performance improvement of health professionals (Almasabi, 2013). The actual launch of quality management began in 1994 with the American–Saudi co-operation to establish the Saudi Committee for Enhancement of Health Services to improve the services provided by MOH hospitals in Saudi Arabia.

As stated by Almasabi (2013), the Central Board for Accreditation of Healthcare Institutions (CBAHI) was formed on the recommendation of the Council of Health Services (CHS) in 2005. A group of experts from various healthcare sectors developed CBAHI standards: MOH, National Guard Health Affairs, King Faisal Specialist Hospital and Research Centre, Armed Forces Medical Services, Saudi ARAMCO, Saudi Commission for Health Specialties, Security Forces Medical Services, Civil Defense and the private sector all participated in developing the

standards. As a result of that collaboration, CBAHI issued the first hospital standards manual[1], and the MOH agreed to implement this quality program in hospitals by 2006 (Almasabi, 2013).

The number of quality standards differ from one program to another. For instance, the CBAHI manual contains 23 standards, the JCI has 16 standards, Canadian accreditation uses 30 standards, French accreditation has 13 standards and Australian accreditation has 43 standards, 19 of which are obligatory and 24 are voluntary (Almasabi, 2013; CBAHI, 2016). Although the majority of accreditation programs worldwide are voluntary, three are mandatory programs, namely CBAHI, French accreditation, Italian accreditation and Australian accreditation (Greenfield, Pawsey, & Braithwaite, 2013).

In 2011, the Saudi Health Services Council declared that all public and private institutions must apply to CBAHI to undergo an accreditation survey to obtain a certificate of national accreditation (CBAHI, 2016). Generally, hospital accreditation in Saudi Arabia is mainly the focus of CBAHI and JCI.

3.6.1 Challenges to the Implementation of Quality in Healthcare Organisations in Saudi Arabia

Challenges to the implementation of quality standards are well-recognised in different research. Although the Saudi government has made great efforts to enhance its health sector to provide the best quality healthcare services, the government has been unable to overcome a number of hurdles to the effective application of quality (Al-Ahmadi & Roland, 2005). The most obvious of these hurdles is healthcare services financing costs (Almasabi, 2013). In Saudi Arabia, the financing system is provided by the Ministry of Finance and the MOH manages the funds for all healthcare facilities (Jannadi et al., 2008). While the MOH receives a large amount of funding to provide these services and to improve their quality of care, the task has remained

[1] (The manual was revised in 2011 & 2016)

difficult for the MOH, conceivably because MOH leadership is still to be fully convinced of the need to implement quality programs (Alharbi, 2018). Efforts to enhance healthcare services in Saudi Arabia are still on-going (Albejaidi, 2010).

Al Attal (2009) reported that one of the barriers affecting the implementation of accreditation programs in hospitals in the Middle East is the relatively high cost of certification arising from training, consultants, registration and site visits. Mumford et al. (2015) also reported a variation in accreditation expenses from 0.03% to 0.60 % of total operating costs of hospitals per year, averaged across the four-year accreditation survey process in public hospitals in Australia. Relatively higher costs were associated with smaller facilities. In such situations, a shortage in the public hospital's budget becomes an obstacle to the process of accreditation.

Another challenge is organizational culture which comprises the attitudes, experiences, beliefs and values of an organization (Al Kuwaiti & Al Muhanna, 2019). Organizational culture influences the degree of commitment shown by its employees (Al Kuwaiti & Al Muhanna, 2019). A positive relationship is observed between organizational culture and organizational commitment among health mangers (Al Kuwaiti & Al Muhanna, 2019). According to Corrêa et al. (2018) the organizational culture, leadership, people management, process orientation and safety are the five dominant factors that directly affect the accreditation process and organizational sustainability.

Leadership commitment and involvement is one of the most significant aspects affecting the implementation of accreditation in hospitals (Al Kuwaiti & Al Muhanna, 2019). A study conducted by Alomari, Alshahrani, and Alyami (2015) of 14 public hospitals located in different cities in Saudi Arabia concluded that leadership commitment to quality and change management was a critical element in organisational transformation to implement quality of

care. In a health accreditation scheme, a lack of leadership commitment is considered an organisational challenge to attaining hospital accreditation (Rahat, 2017).

The workforce is paramount to health organisations which attribute their success to their employees in the accreditation process (Al Kuwaiti & Al Muhanna, 2019). Although the Saudi government has invested heavily in healthcare infrastructure in different provinces, it has failed to operate these facilities with the required number of health professionals, who are the main players in the implementation of healthcare quality management initiatives (Jannadi et al., 2008). This is the main hindrance to quality and accreditation implementation in Saudi Arabia. Furthermore, low staff motivation, a lack of continuous medical education, high patient-physician ratios, inconsistent physician and consultant contribution, increased workload due to more shifts, resistance to change, and low participation of non-nursing staff were identified as challenges confronting many hospitals during the accreditation process (Janati, Ebrahimoghli, Ebadi, & Toofan, 2016; Rahat, 2017; Saadati, Yarifard, Azami-Agdash, & Tabrizi, 2015).

Exposure to data-driven methodology is a real challenge for many public hospitals in Saudi Arabia (MOH, 2017). Quality indicators are used to measure important characteristics of the quality of care that can affect patient health and wellbeing (Al Kuwaiti & Al Muhanna, 2019). Quality indicators are mandatory measuring tools in all healthcare organizations involved in the accreditation process to detect sub-optimal care in structure, process and outcome (Al Kuwaiti & Al Muhanna, 2019). Quality committees in public hospitals in Saudi Arabia are struggling to gather the right data from various departments on a regular basis.

To overcome the aforementioned difficulties, there is a need for an integrated health information system (HIS) in hospitals to link various processes and collect data accurately (Al Kuwaiti & Al Muhanna, 2019). Moreover, such a system is necessary to enable decision-makers to effectively implement quality management practices (WHO, 2006). However, a

number of improvements have been made in HIS in public hospitals which are helpful in ensuring the authenticity of the national HIS and in providing direction while dealing with healthcare services and the implementation of quality management (Walston et al., 2008).

3.7 Central Board for the Accreditation of Healthcare Institutions (CBAHI)

As previously stated, the Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI), formed in 2005 after the Ministerial Decree number 144187/11, is the national body authorised to award accreditation to public and private healthcare facilities in the Kingdom of Saudi Arabia (CBAHI, 2016). CBAHI emerged from the Saudi Health Council as a non-profit organization and is responsible for setting the quality and safety standards to ensure better and safer healthcare (Almasabi, 2013).

In 2013, the Council of Ministers mandated accreditation by CBAHI and gave it its current name.

The mission, vision and values of CBAHI are as follows:

- Mission: to enhance quality and patient safety by supporting healthcare facilities to continually comply with accreditation standards.

- Vision: to be the regional commission in improving quality and patient safety in health care.

- Values:
  1. Commitment to excellence.
  2. Belief in teamwork.
  3. Application of quality standards.
  4. Holistic approach.
  5. Integrity.

3.7.1 The Structure of the National Hospital Standards

The standards are assembled into 23 chapters around key services and functions provided by public hospitals in Saudi Arabia. The chapters in the hospital standards manual are: Leadership (LD), Human Resources (HR), Medical Staff (MS), Provision of Care (PC) Nursing Care (NR), Quality Management and Patient Safety (QM), Patient &Family Education and Rights (PFE/PFR), Anaesthesia Care (AN), Operating Room (OR) Critical Care Units (ICU/PICU/NICU/CCU), Labour & Delivery (L&D), Haemodialysis (HM), Emergency Care (ER), Radiology Services (RD), Burn Care (BC), Oncology & Radiotherapy (ORT), Specialised Care Services: Respiratory Care Services (RS), Dietary Services (DT), Social Care Services (SC), Physiotherapy Services (PT), Dental Care (DN), Management of Information and Medical Records (MOI/MR), Infection Prevention and Control (IPC), Medication Management (MM), Laboratory (LB) and Facility Management and Safety (FMS) (CBAHI, 2016).

Each chapter gives a brief account of the chapter's relevance and contribution to safety and quality of care. Also, each standard is composed of a stem represented by a concise statement, followed by one or more sub-standards to clarify further the requirements of the standard (CBAHI, 2016).

3.7.1.2 Emergency Care Standards

The emergency care chapter comprises an introduction and 15 standards, all of which have sub-standards. The hospital requires a fully functional emergency care centre, fully resourced and focussed on patient care (CBAHI, 2016). A triage system consists of qualified staff working collaboratively. The patient is assessed immediately on arrival and treatment is arranged based on urgency and the patient's clinical condition. Detailed and accurate documentation should be initiated and professionally maintained (CBAHI, 2016).

The standards for this section are:

- ER1-2: A qualified and experienced physician is responsible for the management of the centre, introducing and maintaining policies and practices for managing emergency patients. The emergency centre is available at all times. Staff members are experienced and qualified, including in advanced life support. Specialist on-call details are prominently posted and summoning/consultation procedures established.
- ER3-5: A qualified nurse manager supervises nurses in the centre, there are adequate resources of experienced nurses at all times, and nurses receive continuous training and competency assessment.
- ER6–7: The centre is secure, adequately spacious, resourced, and provisioned to support resuscitation. A secure reception area is set up with waiting space and systems for documenting incoming patients.
- ER8: An effective triage process is in place to classify and allocate incoming patients, and re-triage occurs when necessary through delays or changing patient condition.
- ER9–10: A range of policies and procedures are in place as part of the hospital's protocols (minors, trauma, transfers, and collaboration with staff members).
- ER11: Diagnostic tests are undertaken and reported without delay. Radiology and laboratory staff available at all times.
- ER12-13: Communication is always open with the regional poison and drug information centre, and the ED is equipped to deal with the most common poisonous injuries.
- ER14: Emergency centre quality indicators are monitored and reported.
- ER15: Effective ambulance services, communications and procedures established between the hospital and Red Crescent services.

These are core standards and their implementation may vary in scope or due to large scale emergencies (CBAHI, 2016).

3.7.2 Survey Process

The goal of the survey is to ensure that the CBAHI standards are integrated into the daily practices of the hospital. In addition to observations, interviews and a review of documents, the major part of the survey visit is allocated to the evaluation of the implementation of standards and the performance of the different processes within the hospital. (CBAHI, 2016).

3.7.3 Eligibility for Accreditation

All hospitals licensed to practice in the Kingdom of Saudi Arabia are eligible for CBAHI accreditation. However, according to CBAHI (2016), eligibility for a survey visit to be conducted is contingent upon the fulfilment of all of the following requirements:

- The hospital meets all licensing requirements indicated by the statutes and regulations of the MOH.
- The hospital meets any additional licensing requirements as indicated by other relevant authorities.
- The hospital meets the legal description of a hospital according to the national and international guidelines.
- The hospital provides all types of healthcare services addressed by the CBAHI's National Hospital Standards.
- The hospital has been in operation for at least one year before the on-site survey.

3.7.4 Survey Visit

Each hospital must undergo an on-site survey by the CBAHI survey team to earn accreditation. CBAHI administration handles all preparations for the surveys in coordination with the hospitals. The date of the on-site visit will be determined through mutual agreement between CABHI and the hospital (CBAHI, 2016).

3.7.5 Survey Team

Personnel from the CBAHI and hospital staff participate in activities associated with the site visit. The hospital survey team is composed of seven healthcare professionals as determined by CBAHI (2016):

- The core team, composed of three surveyors: administrator, nurse, and physician.
- The specialty team, composed of four surveyors: pharmacist, infection control specialist, laboratory specialist, and facility management and safety specialist.

Information provided by the hospital in its survey application guides the progression of activities associated with the site visit as well as the duration of the survey, either three or four days (CBAHI, 2016). Most of the surveys carried out by CBAHI over a three-day period, however a four-day survey agenda has been designed for hospitals with a wider scope of services and larger bed capacity (such as tertiary care hospitals and medical cities with multiple buildings and locations) (CBAHI, 2016).

3.7.6 Scoring Process

The hospital must meet all the applicable standards at a satisfactory level to become accredited. Each standard element is scored on a four-point scale as described by CBAHI (2016):

0 = Insufficient Compliance (less than 50% compliance with the standard).
1 = Partial Compliance (from 50% to less than 80% compliance with the standard).
2 = Satisfactory Compliance (80% and more compliance with the standard).
N/A = Not Applicable.

The final score of the hospital is calculated using the average (arithmetic mean) score of all applicable sub-standards, that is, the sum of all values divided by the number of values. If one or more chapters of this manual are not applicable to a particular hospital, this is indicated by "N/A." Non-applicable chapters are not scored and are not included in either the numerator or denominator of the overall score (CBAHI, 2016).

3.7.7 Accreditation Decision

As a rule, the hospital has to meet all applicable standards at an acceptable level to become accredited. Accreditation will be granted when the surveyed hospital proves overall adequate compliance with all applicable standards at the time of the on-site survey and there are no issues of concern related to the safety of patients, staff or visitors (CBAHI, 2016). Accreditation will

also be recommended when a healthcare facility has successfully fulfilled all the requirements of the accreditation. The decision to grant accreditation is not always straightforward. In some cases, the Accreditation Decision Committee may consider the need for more clarification and/or a follow up focused survey of specific standards of concern before a consensus decision to grant accreditation can be reached (CBAHI, 2016). This will also give the hospital a period of time to come to acceptable compliance. Accreditation is valid for three years from the date of certification, provided accreditation is maintained (CBAHI, 2016).

3.7.8 Scoring Guidelines

The scoring criteria is summarised according to CBAHI guidelines as follows:

- Overall score 85% or above
- All essential safety requirements are in satisfactory compliance
- No other issues of concern related to the safety of patients, visitors or staff.

3.8 Assessment of CBAHI's Standards

There is an obvious lack in the body of literature regarding CBAHI standards in relation to Saudi Arabian health sectors. The assessment of CBAHI standards can give a rich understanding of the shortfalls which may have occurred over the years. Alkhenizan & Shaw (2011) reported that the participation of patients and community leaders as partners in the planning process is not mentioned in CBAHI standards and that there is a need for more explicit standards to coordinate risk management activities. They also suggested that the development of standards was not well described. The involvement of patients and community leaders is an area where there is a need for more explicit standards to coordinate risk management activities. Alkhenizan & Shaw (2011) also found the structure of standards was not well organized and there was significant repetition, a lack of sub-headings, a lack of notes describing the intent of standards and a lack of measurable indicators for the majority of standards.

Another study examined the impact of health care quality and CBAHI accreditation in four public hospitals in Saudi Arabia (Almasabi & Thomas, 2017). The study found that CBAHI does not monitor the continuity of health care delivery. The study illustrates the need to sustain improvements over time in the accreditation cycle.

3.9 Accredited Saudi Hospitals

The number of hospitals accredited in Saudi Arabia is increasing gradually. Table 3.1 shows that in 2017, there were 487 hospitals in the Kingdom of which 282 were administered by the MoH and 47 were administered by other government agencies. The private sector accounted for the remaining 158. In 2019, 249 hospitals in Saudi Arabia applied for accreditation with the CBAHI, 133 being government hospitals and 166 being private hospitals. Of these 249, 43 were denied (accreditation expired) (28 government, 15 private), 17 were asked to supply further documentation (11 government, 6 private), and 3 were suspended (all private) (CBAHI, 2019). The CBAHI stated that those hospitals which had not been named (a further 238, 196 government, 42 private) were under review. It was also unclear whether non-compliant hospitals were still licensed. To summarise, 61.8% of the 487 hospitals in Saudi Arabia were not accredited by the CBAHI; that is, 235 (71.4%) of the 329 government-based hospitals and 66 (41.8%) of the 158 private sector hospitals, the latter group failing to receive government accreditation either through non-compliance or they were not under investigation (CBAHI, 2019).

3.10 International Accreditation

It is worth noting that hospitals in Saudi Arabia can also have international accreditation and certification. Dominant governmental and private hospitals have sought stronger commitment by obtaining accreditation from different international accrediting bodies including JCI, Commission on Accreditation for Rehabilitation Facilities (CARF), International Standard

Organization (ISO), Australian Council on Health Care Standards (ACHS), National Committee for Health Quality Assurance (NCQA), Joint Commission on Accreditation of Healthcare Organization (JCAHO) and Accreditation Canada formerly Canadian Council on Health Services Accreditation (CCHSA) (Qureshi, Ullah & Ullah, 2012).

3.11 Saudi Vision 2030

By April 2016, Saudi Arabia announced an ambitious plan called Saudi Vision 2030 to transform the economy and diversify the country's sources of income from its current reliance on oil (Albejaidi & Nair, 2019). In addition to this, the National Transformation Program 2020 (NTP) was approved in June 2016 by the Saudi Royal Cabinet as the interim medium to achieve the goals specified in Saudi Vision 2030. Healthcare is one of the central parts of Saudi Vision 2030.

3.11.1 Saudi Health Vision

With relaxed hospital administration regulations and Vision 2030 initiatives, the private sector is becoming involved in the provision of health care (Al-Ghalayini, 2018). Al-Ghalayini (2018) explained that the projected demand at the end of 2018 was 15,888 hospital beds serving 30 million people which was beyond the capacity of the Ministry to provide. Further, Vision 2030 called for the privatisation of hospitals and the NTP called for the private sector to meet a target of 35% of healthcare provision as an interim, from the then 25%. The focus on digital health services such as integrated healthcare records and reach out services such as outpatient monitoring and communications were of interest, given the near-universal use of mobile technology in the Kingdom, making it attractive to investors (Al-Ghalayini, 2018).

Under Vision 2030, the MOH's healthcare transformation strategy comprises three parts: higher quality services, easier access to those services, and promoting a healthier lifestyle for citizens. Issues include a doubling of people over 60 years of age by 2030 together with

increasing longevity, increasing capacity for the Hajj (1.35m overseas pilgrims were quoted), and high rates of avoidable injury and non-communicable diseases by regional and international standards (MOH, 2018). The MOH noted that primary care was inadequate and inconsistent across the KSA. Secondary and tertiary hospitals were not effectively distributed, and outpatient care was not of a good standard. The MOH found that its services were based on resources and staff rather than the patient or the population. Patient care was inconsistent and an agency found significant safety issues across all hospital categories. Digital information systems were not efficient or effective and there were competency issues with professional staff, 'specifically in relation to Saudi employees' (MOH, 2018, p. 10).

The MOH's transformation strategy is informed by several international protocols: the WHO and World Bank Group's (WBG) health system framework, the United States' Institute for Healthcare Improvements (IHI) triple aim framework, the United States' not-for-profit, National Academy of Medicine (NAM); and England's National Health System (NHS) five-year forward plan (MOH, 2018). The strategy is presented as new models for care, provider and financing reforms including the private sector, governance development, workforce development and digital health record reforms (MOH, 2018).

Relevant to this research, the model of care devised by the Ministry is the urgent care sector (see Figure 3.4) and encompasses each level of focus for the Saudi healthcare system.

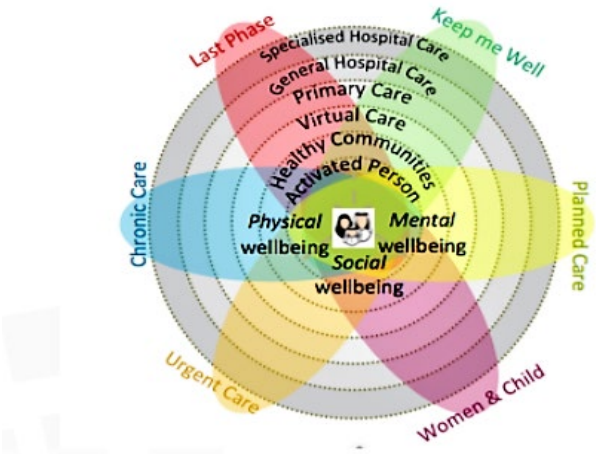

Figure 3.4: Ministry of Health Models of Care

Source: Ministry of Health (2018, p.17)

The urgent care model has a resource control centre, regionalised and dedicated urgent care clinics, and population-based urgent care centres.

The integrated reforms were commenced in 2018 and the first phase is scheduled for completion in 2020. Of particular interest to this study, this phase is concerned with improving facilities, clinical systems and staff competencies (MOH, 2018). These will be delivered through a public-owned corporation that delivers regionalised programs to ensure adequate coverage of the population.

Phase two of the transformation plan commences in 2021 (MOH, 2018). Accountable care organisations (all public healthcare establishments) will be divided into 20 regional sectors governed by a board and responsible for the delivery of services using public and private resources. These organisations, built on the British model, will be responsible for governance: initially staff resources, employment conditions, and competencies. A third sector organisation (coordinating community care organisations) will identify and redress issues such as home care (MOH, 2018). Phase three is coverage for all visitors to the Kingdom through healthcare

(hospital and medical) insurance providers and financial adjustments for sustainable healthcare for all.

The accreditation process is located under governance in the MOH's (2018, p.21) framework, as part of the 'regulatory and improvement functions and institutions necessary to secure and sustain value-based healthcare'. This is a fundamental realignment of the existing system, as shown in (Figure 3.5).

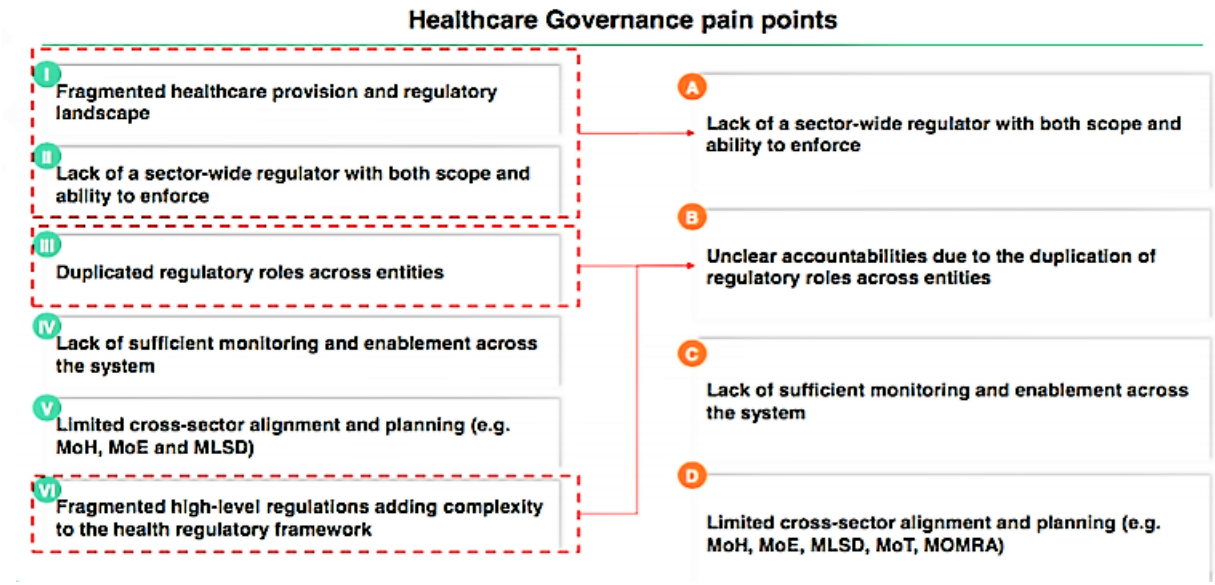

Figure 3.5: Saudi Health System Governance

Note: MOH: Ministry of Health
MOE: Ministry of Education
MLSD: Ministry of Labour and Social Development
MOT: Ministry of Transport
MOMRA: Ministry of Municipal and Rural Affairs
Source: Ministry of Health (2018, p. 47)

The governance section of the MOH's Vision 2030 describes the transition from an operational to a regulatory entity but lacks detail on tasks or targets (MOH, 2018). The Saudi Arabia General Investment Authority (GIA) permitted foreign ownership and operation of hospitals, however, Sfeir, Osman, Al-Ohaly and Makhafar (2019) reported that restrictions had also been lifted on ownership of healthcare facilities, allowing foreigners to fully own, manage and operate general and specialised health centres, radiology and medical laboratories, outpatient surgical facilities and other medical services. Sfeir et al. (2019) reported that the GIA and the MOH were engaged in producing a unified regulatory licensing system for all foreign investment in the healthcare sector.

The government has long tried to address quality and performance issues, however, it has only managed to provide primary and emergency care to the population. A long-range policy, Vision 2030, is intended to accelerate reform in the sector and is highly aspirational. Over time, the government is planning to divest operational healthcare from the public services and concentrate on standardisation and compliance with quality standards, and to train and educate Saudi staff to facilitate quality improvements. Legislation is being prepared for this important work; however, this means that the current MOH structure is unlikely to continue for the period of this research. Another structure will take its place.

3.12 Conclusion

This chapter has introduced Saudi Arabia's healthcare system. It began with a brief overview of cultural, custom, religion, demographic and socio- economic factors in the country, followed by an overview of the health system. This was followed by an outline of the challenges facing the health system in Saudi Arabia. An overview of the quality of care and accreditation in Saudi Arabia was presented. Finally, details of the CBAHI and Saudi Vision 2030 in relation to health care were provided. The following chapter discusses the methodologies used in this thesis and describes the research design.

Chapter 4: Research Design and Methodology

4.1 Introduction

This chapter outlines the research design and discusses the various methods chosen for this study. In order to evaluate quality of care in emergency departments in public hospitals from different angles, a mixed-methods approach involving one qualitative and two quantitative phases was implemented. This chapter first discusses the philosophy, research design and study context. The methods for the quantitative phase 1 are then discussed, including survey development, sampling methods, pilot study, data collection, data quality, and statistical analysis; followed by the methods for the qualitative method in phase 2, including study participants, data instrument, data collection, data analysis. The quantitative phase 3 is then discussed, involving the collection and statistical analysis of key quality performance indicators based on an audit of emergency departments. Finally, data management and ethical issues are considered.

4.2 Philosophical Stance of the Researcher

The three philosophical stances supported by scientists when designing and implementing a research program are positivism, constructivism, and pragmatism (Creswell, 2014). Positivism involves summarising numerical data collected in samples (e.g., computing mean values) and extrapolating the results to infer information about the population from which the samples were drawn. Constructivism involves qualitative methodologies, assuming that knowledge is constructed in terms of the unique characteristics of each individual research participant. Pragmatism does not accept the polarization between quantitative and qualitative methodologies. The philosophical stance of the researcher is pragmatism to collect, analyse, and interpret a mixture of qualitative data and quantitative data to achieve the overall aims of

the research. The challenge faced by the researcher is to bridge positivism and constructivism in order to integrate the research findings into a coherent whole (Bryman, 2006, 2007).

4.3 Research Design

The research design was mixed methods involving three phases as outlined in Figure 4.1. Combining methods gives more informative, complete, and useful outcomes and partners with the philosophy of pragmatism (Creswell, 2014).

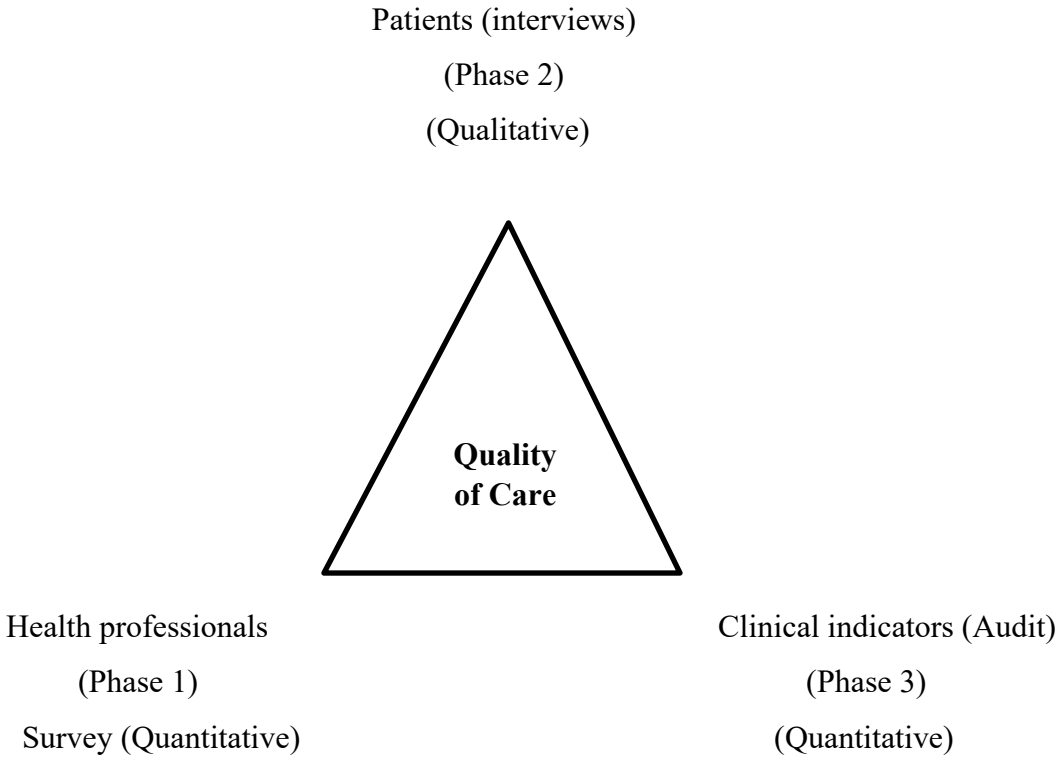

Figure 4.1: Phases of the Research Design

- Phase 1: Quantitative method including a survey of health professionals to describe quality of care and accreditation impact.
- Phase 2: Qualitative method using semi-structured interviews of ED patients.
- Phase 3: Quantitative method for ED quality process indicators.

Mixed methods bridged the gap between the quantitative and qualitative phases of the research and empowered the researcher to view the problem from different angles in order to answer the research questions (Creswell & Plano Clark, 2011; Tashakkori & Teddlie, 2003). Mixed methods research is the ideal paradigm for healthcare research because this approach provides data that can be applied in practice to help decision makers determine health policy and outcomes (Yardley & Bishop, 2015).

Creswell and Plano Clark (2011) stated that mixed methods comprises four major designs: triangulation, explanatory, exploratory, and embedded. This study used an embedded design in which the researcher combined qualitative and quantitative data equally to answer the research questions. There are two timing options for collecting and analysing data in mixed methods research, parallel or sequential (Creswell, 2009; Teddlie & Tashakkori, 2009). In a parallel design, researchers collect quantitative and qualitative data at the same time and each has equal priority in the data collection and analysis phases. This study used parallel timing. The quantitative data collection and qualitative data collection were concurrent.

4.4 Study Context

This mixed methods study was implemented at four accredited hospitals administered by the Ministry of Health (MOH) in Saudi Arabia. Other governmental health agencies like King Faisal Specialist Hospital & Research Centre, Military Hospitals, National Guards Hospital and private sector hospitals were excluded from this study. Table 4.1 outlines the descriptive information about the hospitals.

Table 4.1: Outline Description of the Four Hospitals

	Hospital	Beds	Level of care	Accreditation status
H	King Khalid Hospital, Hail City	300	Secondary	Accredited (CBAHI)
B	King Fahad Specialist Hospital, Buraidah City	500	Secondary	Accredited (CBAHI)
U	King Saud Hospital, Unaizah City	300	Secondary	Accredited (CBAHI)
R	King Salman Hospital, Riyadh City	300	Secondary	Accredited (CBAHI)

Source: Ministry of Health (2018).

The rationale for choosing these four hospitals was as follows. First, these represent the majority of health care organisations which are public sector, fully operated by MOH and which provide the majority of services in Saudi Arabia (60%). Second, there is limited access to private and other governmental hospitals. Therefore, public hospitals are considered a suitable choice of focus in this study for the vast number of public hospitals in Saudi Arabia. Most MOH hospitals' structures and types are similar all over the country and implement the same CBAHI standards and processes (CBAHI, 2016; MOH, 2016). The four hospitals were in three different provinces (Hail, Qassim and Riyadh). Each hospital represented a reference hospital for each province and referrals from peripheral HCOs in each region, road traffic accidents and advanced medical and surgical curatives were eligible to access the hospitals.

4.4.1 King Khalid Hospital in Hail City

King Khalid Hospital in Hail City (KKH-H) is a governmental non-profitable secondary level hospital belonging to the MoH and is responsible for different medical and surgical curatives. The hospital is considered to be the reference medical centre for the Hail region (MOH, 2016). The hospital, located in the city centre of Hail, consists of a rehabilitation building, artificial kidney unit building, medical supply building, eye centre building and base hospital. It has a capacity of 300 beds and 85% of the beds are occupied with patients throughout the year. It

comprises many medical and administrative departments providing day-to-day health services for patients. For instance, Emergency, Operating Room Theatres, Radiology, Laboratories, Endoscopy, Artificial Kidney Unit, Intensive Care Unit, Cardiac Care Unit, Neonate Care Unit, Nursery, Medical Supply, Medical and Surgical Internal Wards, Outpatients, Pharmacy, Information Technology, Management and Finance affairs are all fully connected departments via information technology. Recently, KKH-H underwent accreditation with the Central Board of Accreditation for Healthcare Institutions (CBAHI, 2016b), which is considered the highest national program to ensure quality of services and patient safety by assessing organisational performance against Saudi national standards. According to the management declaration, ambitious projects will be undertaken in the near future to enhance the medical services inside the hospital campus.

4.4.2 King Fahad Specialist Hospital in Buraidah

King Fahad Specialist Hospital, Buraidah (KFSH-B) is located in Buraidah city, Saudi Arabia. It was inaugurated by the Custodian of the Two Holy Mosques, King Fahad Bin Abdul-Aziz in 1988. This hospital represents a distinct medical edifice and provides all medical specialties and the latest medical equipment. KFSH-B is a referral hospital and offers its services for complex cases that are referred to it from other hospitals. The cost to establish the hospital was 550 million riyals. It has a capacity of around 500 beds and was built on an area of 159 thousand square meters, including the main hospital building and consists of five floors and buildings for support services, outpatient buildings, a mosque that can accommodate 200 worshipers and integrated housing for workers. KFSH-B successfully passed the international accreditation assessment tests of the JCI recently and has a CBAHI accreditation certificate.

4.4.3 King Saud Hospital in Unaizah

The King Saud Hospital in Unaizah (KSH-U) is one of the most important health facilities in the Qassim region and provides quality specialist medical services for families in Unaizah city. KSH-U offers a wide range of affordable, high quality general medicine services such as: emergency medical services, hospitalization, radiology, outpatient clinics, surgery, physical therapy, medical rehabilitation, acute care, pharmacy services, laboratories and blood banks, ongoing training and education, medical recording and archiving, dentistry, nutrition, artificial kidney unit and computer science.

4.4.4 King Salman Hospital in Riyadh

King Salman Hospital Riyadh is located in the south of Riyadh city, Saudi Arabia and offers a wide range of affordable, high quality general medical services, such as the prevention, diagnosis and treatment of diseases. The hospital services adults, paediatrics, and neonatal patients in the south Riyadh region. The hospital has medical, surgical, paediatrics, nephrology, diabetic centres, emergency department, adult critical care, and neonatal intensive care units. The hospital also has pharmacy services which are available 24 hours a day, with different divisions involved in inpatient pharmacy, outpatient pharmacy, emergency pharmacy and the drug information centre.

4.5 Rationale for a focus on Emergency Departments

Emergency departments (EDs) are becoming a highly analysed and increasingly feasible opportunity for facilities to influence and offset the overwhelming demands being placed on healthcare delivery systems (Sieck, 2006). In the United States, more than 136 million visits are made to emergency medical services (EMS) every year (Adams, 2016). Patient treatment, discharge, hospitalisation and return visits are not new phenomena and have been discussed for the last three decades as quality issues (Adams, 2016; Duseja, 2015). Therefore, policy makers, organisations and health professionals seek to improve the quality of emergency care for patients and to understand the patient's perspective on the quality of their care (Kalpana, 2013).

4.6 Phase 1: Survey of Health Professionals

Phase 1 involved a quantitative survey of health professionals to gain their perceptions of quality of care and accreditation impact at the four hospitals. A quantitative survey was a useful method of measuring a wide spectrum of perceptions of individuals in a large population (Babbie, 2013; Hinchcliff et al., 2012). The survey method using a questionnaire is a quick, convenient, and economical tool that offers anonymity and confidentiality to the respondents (Zikmund, Babin, Carr, & Griffin, 2013).

4.6.1 Survey Instrument

In order to initiate a survey for this study, it was necessary to examine different surveys on patient quality of care and accreditation. Understanding the survey design and the types of questions and addressing all areas of the main problem was central to the researcher. The aim was to use clear and understandable terms and short questions that had the same meaning for all respondents with respect to the issue of quality of care and accreditation impact. The survey tool was obtained with permission from the original source (El-Jardali, Jamal, Dimassi, Ammar, & Tchaghchaghian, 2008) (see appendix A). It was noted from the survey sections

that the participant's input would assist policy makers to further improve patient outcomes at EDs in public hospitals in Saudi Arabia (see appendix B). The survey consisted of three sections: (A) Quality of care; (B) Accreditation impact; and (C) Information about the participants.

4.6.1.1 Section A: Quality of Care

In this section, the participants evaluated their hospital's ED involvement in the improvement of customers' quality of care. There were six sections comprising 36 questions based on Shortell et al. (1995) and El-Jardali et al. (2008) who claimed that health professionals can evaluate quality of care through the scales of leadership, strategic quality planning, training, quality management, quality results and patient satisfaction. The seven scales are detailed as following:

Leadership: Nine items described to what extent EDs leaders provide support for and are involved in quality improvement. Participants were surveyed on: 1) whether ED leaders provide highly visible leadership in maintaining an environment that supports quality improvement. 2) Whether ED management is the primary driving force behind quality improvement efforts; 3) whether ED leaders allocate available departmental resources to improving quality; 4) whether ED leaders consistently participate in activities to improve the quality of care and services; 5) whether ED leaders have articulated a clear vision for improving the quality of care and services; 6) whether ED leaders have demonstrated an ability to manage the changes needed to improve the quality of care and services; 7) whether ED leaders have started to act on suggestions to improve the quality of care and services; 8) whether ED leaders have a thorough understanding of how to improve the quality of care and services, based on the accreditation results; and 9) whether ED leaders generate confidence that efforts to improve quality will succeed.

Strategic Quality Planning: Six items examined staff involvement and participation in strategic planning for quality improvement. Staff were asked: 1) whether they are given adequate time to plan for and test quality improvements; 2) whether staff in the ED maintained specific goals to improve quality; 3) whether the hospital's quality improvement goals were known throughout the ED; 4) whether staff were involved in developing plans for improving quality; 5) whether patients' expectations about quality played a key role in setting priorities for quality improvement in the ED; and 6) whether staff played a key role in setting priorities for quality improvement through representation in the ED department's organizational chart.

Human Resource Utilisation: Five items described staff education to improve quality and skills. ED staff were asked: 1) whether staff were given education and training in how to identify and act on quality improvement opportunities based on recommendations from accreditation surveys; 2) whether staff were given continuous education and training in methods that support quality improvement; 3) whether staff were given the necessary education and training (through education programs) to improve their job skills and performance; 4) whether staff were rewarded and recognised (e.g., financially and/or otherwise) for improving quality and 5) whether staff use of inter-departmental cooperation to improve the quality of services is supported and encouraged.

Quality Management: Five items evaluated quality management by the staff. ED staff were asked: 1) whether they regularly checked equipment and supplies to make sure they meet quality requirements; 2) whether the ED had effective policies to support the improvement of the quality of care and services (example: Five Rights Principle in Drug Administration); 3) whether the services that the ED provided were thoroughly tested for quality before they were implemented; 4) whether staff viewed quality assurance as a continuing search for ways to improve; and 5) whether ED management encouraged their staff to keep records on quality problems through documentation.

Quality Results: Four items examined the measurement and improvement of ED to improve quality in the department. Staff were asked: 1) whether the ED had shown steady measurable improvements in the quality of patient satisfaction over the past few years; 2) whether there had been measurable improvements in the quality of care provided to patients; 3) whether there had been measurable improvements in the quality of services related to the triage system and waiting time provided by the department; and 4) whether the ED has maintained a high-quality health services despite a staff shortage.

Customer (Patient) Satisfaction: Seven items examined the staff's perceptions regarding patient satisfaction. The staff were asked: 1) whether the ED did a good job assessing current patient needs and expectations; 2) whether the ED did a good job assessing future patient needs and expectations; 3) whether the ED promptly resolved patient complaints; 4) whether patient complaints were studied to identify patterns and learn from them to prevent the same problems from reoccurring; 5) whether the ED used patient data to improve services; 6) whether data on patient satisfaction were widely communicated to ED staff; and 7) whether the ED used data on patient expectations and/or satisfaction when designing new services.

4.6.1.2 Section B: Accreditation Impact

The goal of this section is to examine the perceptions of the impact of accreditation in terms of bringing quality improvement practices to the ED. This section is divided in two: staff involvement in accreditation and accreditation benefits (El-Jardali et al., 2008) and comprises a total of eleven items. Staff were asked: 1) whether during the preparation for the last survey, important changes were implemented in the ED; 2) whether they participated in the implementation of these changes; 3) whether they learned of the recommendations made to their ED since the last survey; 4) whether these recommendations were an opportunity to implement important changes in the ED; 5) whether they participated in the changes that resulted from accreditation recommendations; 6) whether accreditation enables the improvement of patient care; 7) whether accreditation enables the motivation of ED staff and encourages teamwork and collaboration; 8) whether accreditation enables the development of values shared by all professionals in the ED; 9) whether accreditation enables the ED to better respond to the population's needs; 10) whether accreditation is a valuable tool for the ED to implement change; and 11) whether the ED's participation in accreditation enables it to be more responsive when changes are to be implemented.

4.6.1.3 Section C: Information about the Participant

This section was designed to collect personal information about the participants and comprised eight items: gender, age, and years of experience in an ED, years of experience in this ED, qualifications, nationality, occupation category and their involvement into the accreditation process.

4.6.2 Survey Scoring Criteria

The survey consisted of three sections, (A) Quality of care; (B) Accreditation impact (C) Information about the Participant. Sections (A) and (B) required the participants to rate their

answers to each item on a Likert scale: (1)—Strongly disagree, (2)—Disagree, (3)—Neither disagree nor agree, (4)—Agree, (5)—Strongly agree, (6)—Don't know. A Likert scale is an organised scale from which respondents choose the answer that best supports their opinion (Bowling, 2014). It reflects the respondents' views and beliefs, attitudes and opinions by measuring the extent to which they agreed or disagreed with a particular question or statement (Bowling, 2014; Burns & Grove, 1997). Section (C) collected demographic data about the participants who were asked to tick the item which applied to them.

4.6.3 Survey Participants

The participants in phase 1 were health professionals working in the EDs in the four hospitals, namely physicians, nurses, head nurses, and administrators (director of emergency department, director of quality management and quality coordinator). Health professionals' participation in this study was relevant because the impact of accreditation on quality of care would not be achieved without the cooperation and involvement of all ED staff. Therefore, the sample was restricted to health professionals who had been involved in the accreditation process for one year or more.

4.6.4 Inclusion and Exclusion Criteria

Participation in this study was based on different inclusion and exclusion criteria. Only healthcare professionals who had been involved in the ED accreditation process for one year or more were eligible to participate in the study. Permanency was a significant criterion to ensure that the health professionals provided responses about the work that they did every day. The inclusion criteria for health professionals in this phase were therefore (a) health professionals who worked in the ED; and (b) those who had been present during at least one health accreditation process. The exclusion criteria were non-participation in one health service accreditation processes and those who did not regularly work in the ED.

4.6.5 Sampling Technique

Sampling can be described as 'an explicit principle used to select members of the population to be included in the study' (Proctor & Meullenet, 2003, p.75). The sampling method used in this phase was non-probabilistic convenience sampling. A convenience sample was used because it was not feasible to draw a random probability-based sample of the population due to time constraints and cost concerns. Convenience sampling is the most frequently and commonly used method in clinical research (Lunsford & Lunsford, 1995). Dudovskiy (2016) claims that convenience samples have advantages, including (a) simplicity of sampling and the ease of research; (b) data collection can be facilitated in a short time; and (c) it is less expensive to implement than alternative sampling methods.

The total sample size of phase 1 was 279 participants who completed the survey tool in four EDs. By using convenience sampling, the researcher was able to recruit sufficient numbers of available participants who worked in the ED on a daily basis.

4.6.6 Pilot Study

Piloting the survey prior to the start of the study is an important step which provides the researcher with clarification about any unclear components of the questionnaire. Pilot testing is undertaken by distributing the survey instrument to a smaller number of participants before full-scale distribution (Hassan, Schattner, & Mazza, 2006).

4.6.6.1 Face Validity

Face validity refers to the extent to which a question or statement in a questionnaire appears to measure what it claims to be measuring (Buckingham & Saunders, 2004) and has to be documented before administering a new survey instrument. The face validity of the questionnaire was examined through several stages of the pilot study with the cooperation and advice of a panel of experts. The results were obtained from ten health professionals, namely five physicians and

five nurses. Due to their busy schedules, it was difficult to find time to meet with the whole group to discuss the survey and collect feedback on unclear questions and suggestions for improvement. Consequently, the researcher requested the pilot test respondents to include written comments on any unclear, inaccurate or/and irrelevant questions on the pilot survey. They reviewed the components of the questionnaire to ensure it included only relevant content. The accuracy of the components was reported using appropriate methods of testing validity. They were asked to examine each question and identify if there were problems in the formatting, clarity or accuracy of the items, how long it took to answer the question, and also to review whether the items measured the accreditation impact on quality of care. Following the feedback from the expert members, a few changes were made to the format and layout of the questionnaire. The approximate time to complete each questionnaire was between 10 to 15 minutes. This indicated that the survey tool was clear, easy to use and understandable. The researcher evaluated all the comments and suggestions and made amendments to the survey instrument by eliminating a few items that did not provide relevant information and some items were re-written to increase their clarity.

4.5.6.2 Language

This study was conducted in four public hospitals administered by the MOH in Saudi Arabia and the participants were health professionals working in EDs. Since the official language in health practices, including medical documentation and verbal communication between the clinicians, is English, the researcher ensured the survey instrument remained in the English language. The reason for using an English questionnaire is that non-Saudi health professionals with a university education wanted to answer the English version to ensure they completely understood the questions. Furthermore, EDs are staffed by expatriates who have an English background and Saudi nurses with a diploma or certificate of nursing are considered to be English users because

of their prior experience in the field. Both Saudis and non-Saudis with higher levels of education prefer English.

4.6.7 Survey Data Collection

The survey was a paper-based anonymous questionnaire for quality managers, quality coordinators, emergency managers, emergency charge nurses, doctors and nurses working in the ED and who were present during at least one health accreditation process. The data collection started on August 2017 and ended in January 2018. After obtaining ethical approval from Monash University Human Research Ethics Committee and MOH Ethical Committee, the researcher approached the four hospitals to commence the data collection journey. Firstly, research paper dossiers were sent to continuous medical education and academic affairs departments in each hospital for approval. Secondly, the researcher arranged a meeting with the hospital ED management which included the quality management director and ED director and nursing director to explain the study. The purpose of the study was elucidated clearly to the in-charge personnel and all queries were answered in a professional manner. Thirdly, the researcher met staff in the ED in each hospital after the research had been endorsed. A 10-minute oral presentation was given to overview the study and answer the staff's questions. The researcher emphasised to the hospital ED management and ED staff that the survey would only be used for research purposes and the participants' anonymity is assured.

The researcher did not discuss issues related to the responses to avoid introducing bias into the results, nor did the researcher give any indication that a particular result was expected. The researcher asked the participant to evaluate the hospital's involvement in the improvement of consumers' quality of care and the impact of accreditation in terms of bringing quality improvement practices to the hospital. The researcher provided the participant with the package including the survey and information sheet for further reading. Also, the explanatory statements

for the questionnaire were designed in a way that ensures health professionals understand what is asked of them so they can decide whether to participate or not, and if they change their mind, they can withdraw their participation in the survey. Participation was clearly stated as being voluntary and staff members retain the right to decline the invitation to participate. This ensured the anonymity of the respondents and the confidentiality of the surveys. Extra copies were left in the staff tearoom with the researcher's contact details highlighted. Recruitment posters were posted in the staff tearoom.

The researcher recruited the participants during the shift handover at the PM-to-AM shift and the AM-to-PM shift on selected days over the week. The survey was designed to take approximately 10-to-15 minutes in the health professionals' own time, such as a break, at the end of the shift, or at home. The participants returned the completed survey to the assigned locked cabinet at the shift sign-on office. The cabinet is locked to maintain the security of the questionnaires. The researcher attended the ED on a regular basis to collect the completed surveys. The returned surveys were considered as implied consent from the participants in this study. The anticipated period for the data collection was one month in each targeted hospital.

4.6.8 Coding of Variables

The researcher initially used an Excel worksheet for data entry. The researcher coded the questionnaire variables using a unique coding technique as follows:

1. Quality of care

- *Leadership* has nine items coded as: (1) Strongly disagree, (2) Disagree, (3) Neither disagree nor agree, (4) Agree, (5) Strongly agree, (6) Don't know.

- *Strategic Quality Planning* has six items coded as: (1) Strongly disagree, (2) Disagree, (3) Neither disagree nor agree, (4) Agree, (5) Strongly agree, (6) Don't know.

- *Human Resource Utilisation* has five items coded as: (1) Strongly disagree, (2) Disagree, (3) Neither disagree nor agree, (4) Agree, (5) Strongly agree, (6) Don't know.

- *Quality Management* has five items coded as: (1) Strongly disagree, (2) Disagree, (3) Neither disagree nor agree, (4) Agree, (5) Strongly agree, (6) Don't know.
- *Quality Results* has five items coded as: (1) Strongly disagree, (2) Disagree, (3) Neither disagree nor agree, (4) Agree, (5) Strongly agree, (6) Don't know.

- *Patient Satisfaction* has seven items coded as: (1) Strongly disagree, (2) Disagree, (3) Neither disagree nor agree, (4) Agree, (5) Strongly agree, (6) Don't know.

2. Accreditation Impact has eleven items coded as: (1) Strongly disagree, (2) Disagree, (3) Neither disagree nor agree, (4) Agree, (5) Strongly agree, (6) Don't know.

3. Information about the participants was as follows:

- Gender: (1) Female, (2) Male.

- Age: (1) Under 30 years, (2) Between 30 and 40 years, (3) Between 40 and 55 years, (4) Over 55.

- How long have you worked for or been associated in an emergency department? (Years of experience).

- How long have you worked for or been associated in this emergency department? (Years of experience).

- Highest medical degree: (1) Diploma, (2) Bachelor degree, (3) Postgraduate diploma, (4) Master degree, (5) PhD degree, (6) Other.

- Nationality: (1) Saudi, (2) Non-Saudi.

- Occupational category: (1) Physician, (2) Nurse, (3) Head nurse, (4) Director of emergency department/director of quality management/quality coordinator, (5) Other.

- Involvement in the accreditation process was coded on a scale from 1 to 10.

4.6.9 Survey Data Quality

For every research survey, there are multidimensional requirements to ensure a high level of data quality. Before initiating data entry, identification numbers were given to each completed survey. In addition, each part of the survey was given a letter of the alphabet A, B or C. Following this, the survey responses were numbered and coded to indicate the value of each variable. The researcher created a database on an Excel worksheet and exported all data to SPSS v.24. SPSS was used because it is reputed to be the most frequently and widely used statistical program software for quantitative analysis in health research (Bryman, 2012). However, SPSS did not support structural equation modeling (SEM). For this purpose, the data were imported from Excel to SmartPLS software. This software is widely used for structural equation modeling based on the analysis of partial least squares (Hair, Hult, Ringle, & Sarstedt, 2016).

4.6.10 Screening and Cleaning of Survey Data

Prior to conducting the statistical analysis, it was essential to screen and clean the response data collected with the survey tool. For this purpose, the full set of response data, stored in a Microsoft Excel worksheet, were imported into the data editor of IBM SPSS v. 24.0, and missing values (recorded as blank cells) were identified. It was important to identify and exclude the missing values, because if these were included in the statistical analysis, the results could be biased (Roderick, Little, & Rubin, 2002). Avoiding missing data is a preferable method to improve data integrity and eliminate bias. The researcher consulted a biostatistics professor from La Trobe University to evaluate and address the possibility that the deletion of missing values would bias the results. Subsequently, the researcher realised that there are no

other methods by which to replace missing values. Therefore, the researcher used pairwise deletion for these data. All variables with missing data were trimmed from the data analysis.

There were only two missing values in the completed surveys. The total number of cases in the rows of the data editor was N = 279; however, two participants did not provide a complete set of response data because they did not answer the question 'How do you judge your involvement in the accreditation process on a scale from 1 to 10?'. After excluding these two respondents, the size of the purposive sample consisting of all participants who provided a complete set of response data was N = 277.

The data were also checked for erroneous responses that would invalidate the statistical analysis. An independent research fellow was invited for this purpose. The method was to check one survey in 31. Each selected case checked precisely and was compared to the original survey responses to detect erroneously entered data.

The response format for all the items used to measure the constructs was originally coded using the following 6-point scale 1 = Strongly disagree; 2 = Disagree; 3 = Neither disagree nor agree; 4 = Agree; 5 = Strongly agree; and 6 = Don't know. A score of 6 was not the highest level of agreement. Therefore, this 6-point response format did not fulfil the essential condition for an accurate Likert scale, where the level of agreement for each item must be based on an ordinal or ranked hierarchy that measures a construct in one logical direction from one extreme to the other, from the lowest level to the highest level (Carifio & Perla, 2007; Jamieson, 2004). To avoid missing values, all the scores of 6 = Don't know were converted to scores of 3 = Neither disagree nor agree. A respondent who did not know the answer to the item would probably also neither disagree nor agree with the item (Saris, Revilla, Krosnick, & Shaeffer, 2010). Therefore, the response format for each item was converted to 1 = Strongly disagree; 2 = Disagree; 3 = Neither disagree nor agree and Don't know; 4 = Agree; 5 = Strongly agree. This

meant that the response format was consistent with an accurate Likert scale, where a score of 1 represented the lowest quality and 5 represented the highest quality.

4.7 Statistical Analysis of Survey Data

The following sections discuss the statistical analysis of the survey data with respect to (1) theoretical framework; (2) statistical errors in medical and healthcare research; (3) reliability; (4) descriptive statistics; (5) bivariate correlation; (6) multiple linear regression; (7) structural equation modeling; (8) analysis of variance.

4.7.1 Theoretical Framework for Data Analysis

The quantitative data analysis plan for the current study was underpinned by the Donabedian model (Donabedian, 1988, 2002) positing that factors associated with structure, process, and outcome should be evaluated in order to determine the quality of a health care system. Donabedian's articles are some of the most frequently cited in research on quality healthcare management (Ayanian & Markel, 2016; Suñol, 2000). According to the Donabedian model, outlined diagrammatically in Chapter 1 (Figure 1.1), improvements in the structure of health care will lead to improvements in processes that in turn will lead to axiomatic improvements in outcomes. In order to adequately evaluate the quality of a health care system, researchers must evaluate how the outcomes are related to the structures and/or processes in a healthcare system (Closs & Tierney, 1993; El-Jardali et al., 2008; Kajonius & Kazemi, 2016; Liu et al., 2011). In the context of the survey data, the structure, processes, and outcomes were measured using the latent variables listed in Table 4.2.

Table 4.2: Latent Variables

	Latent Variables	Survey Items	Number of Items
LS	Leadership	Q01 to Q09	9
HRU	Human Resource Utilisation	Q16 to Q20	5
QM	Quality Management	Q21 to Q25	5
ACI	Accreditation Impact	A01 to A11	11
SQP	Strategic Quality Planning	Q10 to Q15	6
CPS	Customer (Patient) Satisfaction	Q30 to Q36	7
QR	Quality Results	Q26 to Q29	4

A latent variable represents a complex construct or concept that cannot be measured with a single survey item but must be operationalised by aggregating multiple items (Hair, Anderson, Babin, & Black, 2010). The seven latent variables used in this study representing the process and outcome dimensions of the Donabedian model were each measured using 4 to 11 survey items. The structure component of the Donabedian model was not a latent variable but was composed of the individual demographic characteristics of the respondents, each measured with a single survey item (i.e., Hospital, Nationality, Gender, Age, Experience in Emergency Department, Medical degree, and Occupation) and also with the Human Resource Utilisation variable defined in Table 4.2.

4.7.2 Statistical Errors in Medical and Healthcare Research

In the last decade, considerable concern has been expressed in the scholarly literature regarding the misuse and misinterpretation of the statistical analysis of data collected by medical and healthcare researchers. The statistics reported in many articles, including those in high impact factor medical and healthcare journals, may be misleading or even meaningless (Fernandes-Taylor, Hyun, Reeder, & Harris, 2011; Halsey, Curran-Everett, Vowler, & Drummond, 2015;

Kühberger, Fritz, Lermer, & Scherndl, 2015; Nuzzo, 2014; Silva-Ayçaguer, Suárez-Gil, & Fernández-Somoano, 2010; Yan, Robert, & Li, 2017; Young, 2007). Lang and Altman (2013), in a review of the use of statistics in the medical and healthcare research literature, concluded that 'large proportions of articles contain errors in the application, analysis, interpretation, or reporting of statistics or in the design or conduct of research' (p. 1). Consequently, for the purposes of this study, the researcher attempted, as far as possible, to ensure that the quantitative data analysis plan could be justified. Therefore, the reviewers who read and criticize this dissertation will not in future name and shame the researcher for contributing even more statistical errors to the scholarly literature. The quantitative data analysis plan does not only describe the statistical methods that were chosen to analyse the survey data, but also includes a literature review to discuss the limitations of these methods.

4.7.3 Reliability

One of the main assumptions of descriptive and inferential analysis in medical and healthcare research is that the multiple item scores designed to measure a construct or scale based on response data collected with a survey tool must exhibit internal consistency reliability. If the constructs or scales are not reliably measured, the results of descriptive and inferential statistical analysis are compromised and may even be meaningless (DeVellis, 2016). Consequently, prior to conducting the statistical analysis of the survey data collected in the present study, it was essential to evaluate the reliability of the latent variables. The researcher is aware that the published reliability estimates provided by the developers of the survey tool are not applicable, e.g. El-Jardali et al. (2008, p. 364) reported that 'Cronbach alpha exceeded 0.60 for all scales'. It is essential for researchers to always test for reliability using the survey data collected in the context of their own local studies, because reliability estimates may vary significantly depending on the size and composition of the samples that are drawn from different populations (Charter, 2003; B. Thompson, 2002).

Cronbach's alpha is considered incorrectly by many researchers to be a gold standard for estimating internal consistency reliability (Streiner, 2003). The following interpretation of Cronbach's alpha is commonly applied in practice ≥ 0.9 is Excellent; ≥ 0.8 is Good; ≥ 0.7 is Acceptable; ≥ 0.6 is Questionable; ≥ 0.5 is Poor; and < .5 is Unacceptable (Tavakol & Dennick, 2011). However, Cronbach's alpha is based on many theoretical assumptions and limitations that are neglected by many researchers. The item scores must be normally distributed (Sheng & Sheng, 2012), the error variances between the items must not be correlated, the factor loading coefficients for each item must be equal (Trizano-Hermosilla & Alvarado, 2016) and the sample size must be larger than 200 (Yurdugül, 2008). The literature contains many misleading estimates of internal consistency reliability based on Cronbach's alpha because these assumptions were violated (Dunn, Baguley, & Brunsden, 2014; McNeish, 2018; Ritter, 2010; Shevlin, Miles, Davies, & Walker, 2000; Trizano-Hermosilla & Alvarado, 2016). Starkweather (2012) recommended researchers to "step out of the past, stop using coefficient alpha, there are better ways to calculate reliability". For these reasons, in the current study, both Cronbach's alpha and the composite reliability coefficient were used to estimate internal consistency reliability.

4.7.4 Descriptive Statistics

The frequency distributions of the categorical variables (counts and percentages within each category) were computed using IBM SPSS software to summarise the demographic characteristics of the respondents. Cross-tabulations were constructed to explore the associations between the frequencies in each category of the demographic characteristics. Quality Results, Leadership, Strategic Quality Planning, Human Resource Utilisation, Quality Management, Patient Satisfaction, and Accreditation Impact were operationalised by averaging the scores for the items that constituted each reliably measured scale. Consequently, each scale ranged from 1 = lowest level of agreement to 5 = highest level of agreement. The normality of

each scale was checked visually by drawing a bell-shaped frequency distribution histogram. The descriptive statistics computed for each scale included mean, standard deviation (*SD*) and 95% confidence intervals (*CI*). The 95% *CI* indicated that the true population mean would, theoretically, in 95% out of 100 samples, be captured within the lower and upper limits of the intervals (Belia, Fidler, Williams, & Cumming, 2005; Fidler, Thomason, Cumming, Finch, & Leeman, 2004). Therefore, if the 95% confidence intervals of two mean values do not overlap each other, it can be inferred that the two mean values are derived from different populations (Kock, 2016).

4.7.5 Correlation Analysis

Bivariate correlation analysis was used in this study to estimate the strengths of the associations between the survey variables. A significant correlation was indicated if $p < .05$ for Pearson's *r* coefficient. However, bivariate correlation analysis could provide misleading results because the root cause of a zero-order bivariate correlation between two variables is often their conjoint correlation or covariation with one or more other variables in the same set of data. Furthermore, when a set of variables are simulated in an Excel spreadsheet using a random number generator, it is possible to find many bivariate correlations between pairs of variables that are only caused by chance, and not because there are any meaningful or realistic associations between the variables. Therefore, zero-order bivariate correlation coefficients are often spurious and may provide little useful information about how one variable is associated with a second variable (Ward, 2013). Multivariate statistical analysis was more appropriate to evaluate the partial correlations between quality outcomes and processes in the present study. Partial correlations take into account the effects of the correlation between two variables being controlled by other variables. In a multivariate model, the partial correlations are adjusted to take into account the correlations between other variables in the same model (Waliczek, 1996). The variables that

are significantly correlated using bivariate correlation analysis are often not significant when the correlated variables are combined into a single model. This is called partialling out.

4.7.6 Multiple Linear Regression

Multiple linear regression analysis was not used in the current study to examine the relationships between variables for the following reasons. First, the linearity of the relationships posited by the Donabedian model has been questioned (Carayon et al., 2006; Mitchell, Ferketich, Jennings, & Care, 1998) implying that a model constructed using multiple linear regression analysis may not necessarily be the most appropriate way to test the Donabedian model. Second, multiple linear regression analysis is underpinned by many theoretical assumptions, which, if violated, may compromise the validity of the results (Chatterjee & Hadi, 2015; Osborne & Waters, 2002; Rawlings, Pantula, & Dickey, 2001). These assumptions include (a) the dependent variable must be reliably measured at the scale/interval level; (b) measurement errors are permitted in the dependent variable, but little or no measurement errors are permitted in the independent variables; (c) the data must be a good fit to a linear model (i.e., there must be straight line relationships between the dependent variable and each of the independent variables); (c) there should be no multicollinearity (i.e., the independent variables must not be strongly correlated with other because this inflates the variances, and compromises the test statistics); however, the effects of multicollinearity are difficult to measure in practice (O'Brien, 2007); (d) the residuals (i.e., the differences between the observed and predicted values of the dependent variable) must be normally distributed; (e) there must be no outliers (i.e., excessively large or small values that are not representative of the sample); (f) there should be no heteroskedacity (i.e., the residuals should be equal across all of the predicted values of the dependent variable); and (g) the sample size should be large enough to provide sufficient statistical power to detect relationships between the dependent and independent variables at the conventional $p < .05$ level of statistical significance; and (h)

random sampling must be used to collect the data because 'it is pointless to estimate the p value for non-random samples' (Figueiredo Filho et al., 2013, p.31).

All of the aforementioned assumptions must be tested to determine the validity of a multiple linear regression model (Bagley, White, & Golomb, 2001; Osborne & Waters, 2002). Other errors associated with multiple linear regression analysis include the commonly used stepwise procedure to select the independent variables. The stepwise method has been heavily criticized in the literature (Goodenough, Hart, & Stafford, 2012; Whittingham, Stephens, Bradbury, & Freckleton, 2006) because it does not necessarily select the most appropriate independent variables. In this study, strategic quality planning was eliminated by the stepwise procedure from the multiple regression analysis. Strategic quality planning could not be used as a significant predictor of quality results at $p < .05$ in the regression model because this scale was partialled out by the stepwise procedure, due to its strong partial correlation with all the other predictor variables.

Stepwise multiple linear regression analysis of empirical survey data has previously been applied to test the assumptions of the Donabedian model, using outcome factors as the dependent variable, with structure and process factors as the independent variables. For example, Kajonius and Kazemi (2016) used this method to conclude, in the context of elderly care, that staffing (the number of caregivers per patient) and process (how caregivers behaved towards their patients) resulted ultimately in a positive outcome (improved care of patients). However, none of the underlying assumptions were tested and this model could be erroneous.

4.7.7 Structural Equation Modeling

The most modern second-generation multivariate method for modeling the partial correlations between the variables collected in medical and healthcare research is structural equation modeling (SEM) (Avkiran, 2018; Beran & Violato, 2010; Hair et al., 2016; Johnson & Russell,

2015). In the 21st century, SEM has largely replaced first generation methods, including multiple linear regression. The researcher chose to use partial least squares structural equation modeling (PLS-SEM) to analyse the available survey data to explore the relationships between the variables collected in the survey. The main reason for choosing PLS-SEM was that it has less restrictive theoretical assumptions than multiple regression analysis and other SEM methods (Hair et al., 2016). Furthermore, PLS-SEM is the most modern modeling technique that has been successfully applied by many researchers in the last decade to construct statistical models based on survey data collected in American, Europe, Middle East, and Asian settings, with applications in organisational and operations management, including hospitals and medical clinics (Abdi & Senin, 2014; Beran & Violato, 2010; Johnson & Russell, 2015; Peng & Lai, 2012). Avkiran (2018) stated that 'PLS-SEM has become an indispensable tool for managers, policy makers and regulators in the health care sector'(p.1).

Unlike covariance-based SEM (CB-SEM) which attempts to reproduce the covariance matrix, PLS-SEM operates by optimizing the explained variance between multiple variables. PLS-SEM is a non-parametric method which operates effectively using variables measured with ordinal level scores that may deviate from normality and may not necessarily be linearly related. PLS-SEM is an exploratory method of analysis which aims to generate hypotheses or expand theory by inductive reasoning, rather a confirmatory analysis, which aims to test predefined hypotheses by deductive reasoning (Hair et al., 2016). Therefore, no hypotheses are presented in the data analysis plan. The model to explore the relationships between the process, and outcome dimensions of the Donabedian model was conducted by PLS-SEM using SmartPLS software, as described by Wong (2013) using the following steps:

Step 1: A CSV (comma-delimited) file containing the scores for each survey item were imported into SmartPLS.

Step 2: The item scores are transformed into Z- scores so that they were standardised into a common measurement scale, with a mean of 0.0 and a variance of 1.0.

Step 3: A path diagram was drawn using the graphic user interface of SmartPLS to represent the Donabedian model, as depicted in Figure 4.2. The oval blue symbols are the survey variables. The unidirectional arrows represent the path coefficients measuring the strength and directions (positive or negative) of the partial correlations between pairs of latent variables. Structure was represented by Human Resource Utilisation. Process was represented by a linear combination of Leadership, Quality Management, Patient Satisfaction, Accreditation Impact, and Strategic Quality Planning. Outcome was represented by Quality Results.

Step 4: The measurement model was validated by testing for the assumptions of internal consistency reliability and convergent validity. The factor loading coefficients for all of the indicators that constituted each latent variable must be at least 0.5. The average variance extracted (AVE) by the indicators that constituted each latent variable should be at least 50%. The internal consistency reliability coefficient for each latent variable should be at least 0.7 (Hair et al., 2016).

Step 5: The structural model was evaluated by interpreting the standardized path coefficients, which could potentially range from −1 to +1. The relative magnitudes of the path coefficients indicate the strengths of the correlations between the outcome, structure, and process variables. The statistical significance of each path coefficient is evaluated by bootstrapping, meaning that 5000 random samples are extracted from the data set in order to compute the mean and standard error (SE) of each path coefficient. Two-tailed *t*-tests were then conducted (where $t = \beta/SE$) to determine if the mean value of each path coefficient was significantly different from zero at the conventional $p < .05$ level of statistical significance. The R^2 values (i.e., the proportions of the variance explained in each latent variable) were interpreted as effect sizes, where .04 = negligible; .25 = moderate, and .64 = strong (Ferguson, 2009).

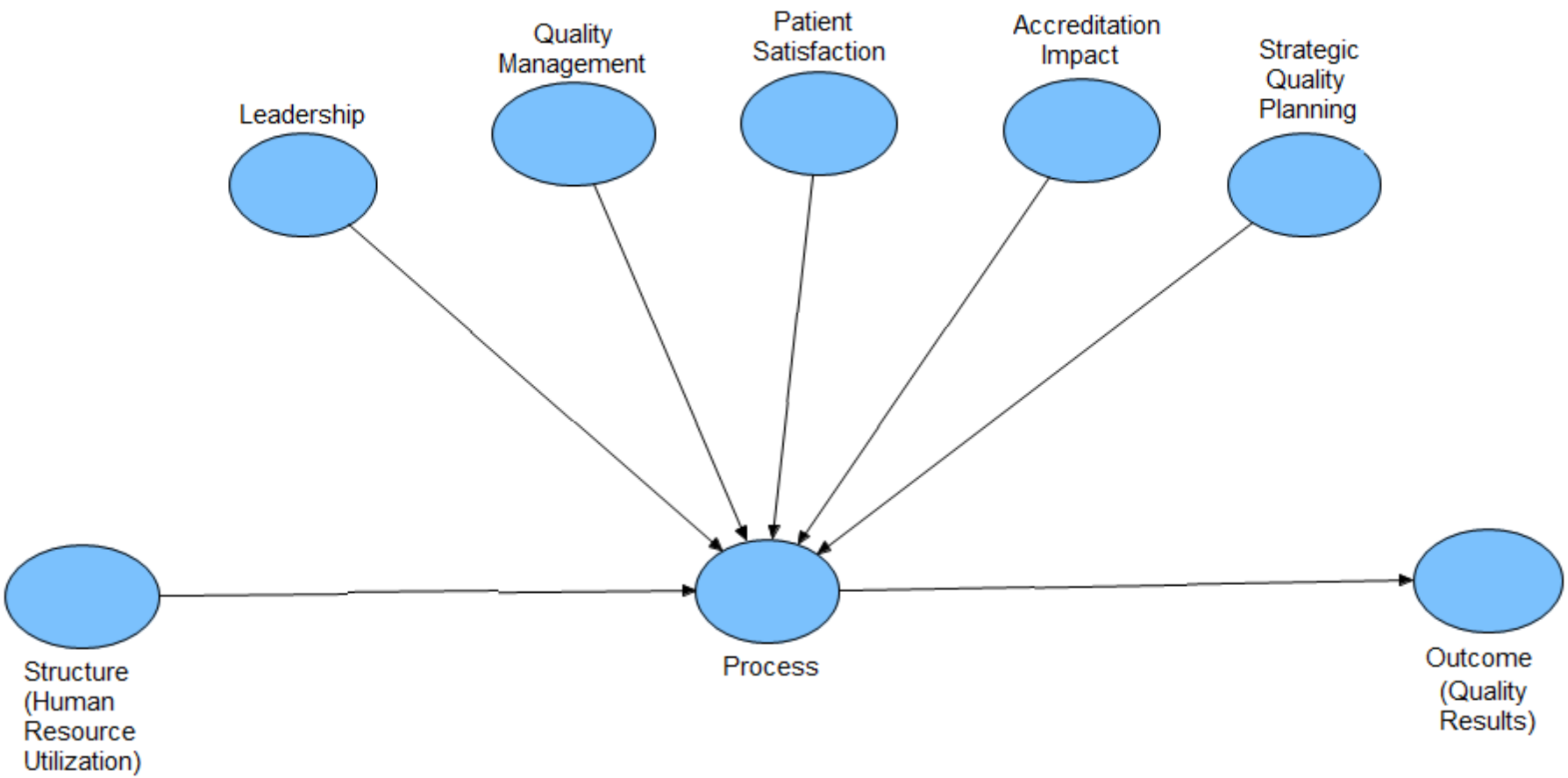

Figure 4.2: Path Diagram of Relationships between Latent Variables

LS = Leadership; CPS = Customer (Patient) Satisfaction; QM = Quality Management; HRU = Human Resource Utilisation; ACI = Accreditation Impact; SQP = Strategic Quality Planning; QR = Quality Results.

4.7.8 Analysis of Variance

Analysis of Variance (ANOVA) was conducted to determine the extent to which the mean scores for the seven quality variables varied between mutually exclusive categories of respondents, specifically the Hospital (4 nominal groups), and Occupational category (3 nominal groups). The seven dependent variables were Quality Results, Leadership, Strategic Quality Planning, Human Resource Utilisation, Quality Management, Patient Satisfaction, and Accreditation Impact.

The results of ANOVA are sensitive to violations of several theoretical assumptions. If these assumptions are violated, the results may be compromised (Rutherford, 2001). (a) ANOVA is performed on dependent variables classified into groups or levels with respect to mutually exclusive categorical factors (e.g., demographic characteristics); (b) ANOVA is most powerful when applied to balanced designs, meaning that there should be exactly the same sample size in each group or level. In this study, however, the design was unbalanced, because it was not possible to control the sample size in each demographic category, so the results may be compromised; (c) ANOVA assumes that the dependent variable is normally distributed and that the variance of the dependent variable is same or homogeneous in each group. Levene's test was used to check for homogeneity of variance; however, Levene's test has been criticised by some statisticians because it does not always provide reliable results (McGuinness, 2002) and (e) the sample size should be large enough to provide sufficient statistical power to detect relationships between the dependent and independent variables at the conventional $p < .05$ level of statistical significance. The output included the F-test statistics and the p-values for each of the independent variables. The decision rule was to declare that the demographic factor was significant if $p < .05$ for the F-test statistic.

The problem with conducting more than one ANOVA or t-test in one study is that the Type I error rate is inflated (i.e., too many false significant results are generated by random chance) when multiple inferential tests are conducted in one study (Hair et al., 2010). The probability of making Type I errors increases with each successively executed test, and this source of bias needs to be controlled. A widely used method to correct for inflation of Type I errors is the Bonferroni adjustment, whereby the p value to indicate statistical significance is reduced from the conventional .05 level down to .05/k where k = the total number of tests performed (Herve, 2007). Thus, if because seven ANOVA and seven t tests are performed on the seven dependent variables in this study (i.e., Quality Results, Leadership, Strategic Quality Planning, Human Resource Utilisation, Quality Management, Patient Satisfaction, and Accreditation Impact), the p value to indicate statistical significance should ideally be reduced from .05 to .05/7 = .007. However, the Bonferroni adjustment was not applied because it causes an increase in Type II errors, leading to the generation of too many false non-significant results (Perneger, 1998).

4.8 Sample Size

The interpretation of the results of the statistical analysis of the survey data could be misleading if the sample size is too small to provide adequate statistical power to generate accurate statistical inferences (Zodpey, 2004). Based on the rules of thumb recommended by VanVoorhis and Morgan (2007), the sample size of N = 277 used for the questionnaire survey was sufficient to provide adequate statistical power to obtain accurate statistical inferences at the conventional .05 level of statistical significance.

4.9 Phase 2: Semi-structured Interviews

There are different methods of data collection in qualitative research, including observations, textual or visual analysis and interviews with individuals or group (Silverman, 2013). However, the most common methods used, particularly in healthcare research, are interviews and focus

groups (Britten, 2007). Although the surveys provided a significant amount of information, understanding the problem from the patients' point of views was required in this study. This research used interviews with patients as a qualitative method to assess in depth and analyse the issue. An interview can be stated as a method of communication in which the researcher asks participants questions in face-to-face situation in order to find out what they do, think and feel (Collis & Hussey, 2013).

There are different types of interviews namely, semi-structured, structured and unstructured interviews. Flick (2014) claims that the intention underpinning face-to-face, semi-structured interviews is linked to the expectation that the interviewed participants are likely to express more than they would in a non-face-to-face questionnaire. Semi-structured interviews can give the participants a chance to provide detailed explanations about the phenomenon under study (Polit & Beck, 2008).

A decision was made by the researcher to use semi-structure interviews as the qualitative data collection method with emergency patients in phase 2. The researcher is a Saudi health care quality professional and university lecturer. However, the researcher is well oriented to different cultural issues that potentially might arise during the interview processes. Therefore, semi-structured interviews were conducted by the researcher and a female assistant in the Arabic language lasting from 15 to 20 minutes. Data were gathered in the beginning of August 2017 to January 2018.

4.9.1 Interview Participants

The participants were ED patients including those who had minor conditions and were discharged and patients who were admitted in the targeted hospitals. The sample for the qualitative phase was selected using a purposive sampling approach. This is a widely used sampling technique, in that participants are recruited based on preselected criteria that are

relevant to a specific research question. It is also called judgment sampling and is designed to provide information-rich cases for in-depth study (Schneider & Elliott, 2003). In purposive sampling, participants are those who have the required status, experience or are known to possess knowledge to provide information for the researcher (Patton, 2002).

4.9.2 Collection of Qualitative Data

Semi-structured interviews were conducted with the purposive sample consisting of 11 patients (8 male and 3 female) who visited the EDs at four hospitals in three provinces in Saudi Arabia, as outlined in Table 4.3.

Table 4.3: Interviewed Patients (N = 11)

	Hospital	City	Province	Number of patients			Patient codes
				Total	Male	Female	
H	King Khalid Hospital	Hail	Hail	4	3	1	HM1 HM2 HM3 HF1
B	King Fahad Specialist Hospital	Buraidah	Qassim	3	3	0	BM1 BM2 BM3
U	King Saud Hospital in Unaizah City	Unaizah	Qassim	2	1	1	UM1 UF1
R	King Salman Hospital	Riyadh	Riyadh	2	1	1	RM1 RM2

Table 4.4 lists the nine interview questions. The interviews were conducted in Arabic and recorded in audio files prior to being transcribed into English in text files using Microsoft Word®. The names of the patients and ED staff were coded to ensure that their right to anonymity was not violated. Because the results were written in English and not Arabic, it was

not possible to conduct member checking (i.e., returning the results to the patients to check for accuracy and resonance with their experiences).

Table 4.4: Interview Questions

1	Why did you come to the ED?
2	How often do you come to the ED in this hospital for either yourself and your family? (e.g., how many times in a week, month or a year?).
3	Could you describe the quality of care provided in the ED in this hospital?
4	Could you describe your level of satisfaction with the care provided in this ED during this presentation?
5	How do you evaluate the quality of communication between the patient and health professionals in the ED? For example (keeping you informed about tests, diagnosis and treatment, answering your questions, using language and terms you can understand and showing you respect).
6	Could you describe your experiences of waiting in the ED?
7	What are the most important things you would like to tell the ED leaders that would improve your ED experience?
8	What would you like to tell the ED leaders that was very good about the care you received in the ED?
9	If you had the health professionals in front of you now, what would you like to tell them?

It was not possible to improve the small sample size for the interviews or avoid the under-representation of females. There were difficulties in recruiting a larger number of ED patients because most of them were in poor health and/or they did not want to talk. Saudi Arabia is a conservative society and it is a very difficult cultural issue to elicit the personal opinions of women. For cultural reasons, the researcher hired a female research assistant to interview the female patients. The problems experienced by the researcher interviewing women in this study were also experienced by other researchers working in the Arab world (e.g. (Al-Amer et al., 2018; Benstead, 2018). The difficulties associated with recruiting participants for interviews in Saudi Arabia are discussed in the limitations section of the conclusion chapter.

4.10 Thematic Analysis of Interview Transcripts

Qualitative researchers are required to provide evidence to demonstrate that the thematic analysis of interview transcripts has been conducted in a precise, consistent, and exhaustive manner and that the results are trustworthy. It is essential to describe the methods in sufficient detail to enable the reader to determine whether the process was credible (Nowell, Norris, White, & Moules, 2017). The following evidence is provided to establish the credibility of the qualitative analysis.

Although a sample size of 11 patients may appear to be small, 6 to 12 interviews are often enough to achieve saturation in healthcare research (Guest, Bunce, & Johnson, 2006). Saturation means that, in general, after a certain number of participants have been interviewed, little that is new comes out of the transcripts (Saunders et al., 2018). Saturation appeared to be reached because the interview responses to identify the four primary themes listed in Table 6.3 were provided by all eleven participants.

The interviews were defined as semi-structured, because in addition to asking directly for responses to the nine questions listed in Table 4.4, the researcher and his assistant also used interjections to prompt and encourage the patients to answer the questions in more detail. However, the purpose of the interjections was not to prejudice the results by putting words into the respondent's mouths, because such a directed approach could potentially generate biased responses (O'Connell & Kowal, 2008).

A preliminary thematic analysis was conducted using Nvivo® software. Nvivo classified all of the interview responses into nodes. Each node consisted of a collection of one or more phrases or sentences. However, the rigid and mechanical processes used by Nvivo did not appear to generate meaningful results. Nvivo classified the interview responses into 57 nodes; however, the reason for so many nodes was not clear. Although the output of Nvivo provided

considerable volume and breadth, it appeared to provide limited depth of meaning. The researcher's experience confirmed the many criticisms in the literature regarding the difficulties associated with the use of Nvivo and similar software for qualitative data analysis (e.g., Banner & Albarran, 2009; John & Johnson, 2000; Rodik & Primorac, 2015; Schönfelder, 2011; Zamawe, 2015).The results obtained using Nvivo were therefore not used.

The researcher adopted the manual framework for the thematic analysis of interview data originally designed for research in psychology by Braun and Clarke (2006). This framework involved the following six steps:

Step 1: Become thoroughly familiar with the qualitative data.
Step 2: Generate an initial coding for each unit of information.
Step 3: Identify the primary themes based on the initial coding.
Step 4: Identify the sub-themes.
Step 5: Review and refine the coding of the primary and secondary themes.
Step 6: Tabulate, interpret, and discuss the results of the thematic analysis.

The initial coding was the process of identifying themes by attaching coding of selected units of information (i.e., one or more phrases or sentences) extracted from the interview transcripts with alphanumeric labels. A primary theme was identified as a perception or an experience of an interviewed participant that conveyed a specific meaning that the researcher considered to be relevant. The sub-themes consisted of mutually exclusive manifestations of each primary theme. Braun and Clarke's (2006) framework required inductive and/or deductive reasoning to extract themes from qualitative data. An inductive approach does not search for anything beyond interpreting what was said and does not depend on predefined concepts, ideas, and/or prior knowledge. An inductive approach requires the researcher to adopt bracketing, meaning to take a neutral stance, by setting aside all previous knowledge of the topic under investigation. However, bracketing is difficult to achieve in practice (Fischer, 2009). The deductive approach,

in contrast, requires the researcher to interpret the data using preconceived concepts, ideas, and/or prior knowledge. A predefined codebook or a priori template of themes, based on existing knowledge of the topic under investigation, is devised in order to interpret the themes and answer specified questions. In this study, the template of primary themes and sub-themes in Table 4.5 was defined before the thematic analysis was conducted, based on existing knowledge, including the results of previous surveys and the literature review. Each of the four primary themes was underpinned by the theoretical framework, specifically the Donabedian Model. Context was related to the structure of EDs.

Table 4.5: Template of Primary Themes

Primary theme	Sub-themes	Questions	Donabedian Model
Context	Reasons for visit	Why did the patients come to the ED?	Process (i.e. the actions taken by the patients)
	Number of visits	How many times did the patients visit the ED?	
Quality of Care	Good quality of care	What indicators did the patients use to perceive a good quality of care in the ED?	Process (i.e., how the health care was delivered)
	Poor quality of care	What indicators did the patients use to perceive a poor quality of care in the ED?	
Satisfaction	Satisfaction level	To what extent were the patients satisfied with the quality of care in the ED?	Outcome (i.e., the effects of healthcare experiences on the patients)
Messages for ED leaders	Recommendations	What did the patients recommend to improve quality of care in the ED?	
	Commendations	How did the patients praise the ED staff?	

The primary themes Context and Quality of Care were underpinned by the process dimensions of the Donabedian model, whilst the primary themes Satisfaction, Recommendations and Messages for ED leaders were underpinned by the outcome dimension of the Donabedian model.

Each unit of information was coded with an initial alphanumeric code representing the hospital and patient (see Table 4.4) followed by a numeric code to represent the primary themes and sub- themes. Units of information that were considered to be irrelevant, including greetings, anecdotal information, repetition, and the interjections of the researcher were excluded from the thematic analysis. The researcher did not attempt to bias the results by selectively excluding patients' responses that he disagreed with, or by selectively emphasizing the responses that he agreed with. After refining the coding of the primary and secondary themes, the template in 4.5 was expanded. The coded units of information were aggregated into themes in a Microsoft Excel® spreadsheet and the frequencies of each theme were computed using the methods described by Meyer and Avery (2009). The results of the thematic analysis tabulated in Excel were reported using verbatim quotations extracted from the interview transcripts (in italics) that the researcher interpreted to identify and describe each primary theme and sub-theme.

4.10.1 Inter-rater Agreement

A statistical analysis using Cohen's Kappa (K) was conducted to estimate the inter-rater reliability of the thematic analysis of the interview data. K is commonly used in medical and healthcare research to evaluate the level of agreement between two raters of qualitative data (McHugh, 2012). The K statistic is measured on a scale from +1 (perfect agreement) through 0 (no agreement above that expected by chance) down to -1 (complete disagreement). The value of K is interpreted as follows: $K \leq 0$ indicates no agreement; K = .01 to .20 indicates none to slight agreement, K = .20 to .40 indicates fair agreement, K = 41 to .60 indicates moderate agreement, K = .61 to .80 indicates substantial agreement and K = .81 to 1.00 indicates almost perfect to perfect agreement.

In order to estimate K two raters (specifically the researcher and a researcher with good experience in qualitative analysis) classified the interview responses into categories. The two researchers independently identified the primary theme Satisfaction extracted from 13

interview responses provided by 11 patients. Both raters classified different manifestations within the sub-theme Level of satisfaction. The results of the statistical analysis (K = .888, p < .001) indicated almost perfect agreement. Slight differences were found in the semantic interpretation of a few of the participant's responses (e.g., the researcher rated the response "It was in the middle" as moderate satisfaction whilst the other researcher rated the same statement as neutral). Consequently, the researcher believes that the thematic analysis of the interview data was reliable.

4.10.2 Rigour and Trustworthiness of Qualitative Data

The rigour and trustworthiness of the qualitative data were confirmed by the following procedures (Patton, 2002). First, a trusting relationship was established between the researchers asking the questions and the participants. Second, the inclusion criteria for the patients were well defined. Third, the semi-structured interview questions were designed by the researcher using the English language and then translated into the Arabic language using an accredited translator. Questions were rechecked by the researcher who speaks and writes both languages fluently. Fourth, the interviews were face-to-face audio-taped recorded. Lastly, all tapes were transcribed and analysed according to the purpose of the study.

4.11 Phase 3: Analysis of Key Performance Quality Process Indicators for EDs

Phase three of this study includes the statistical report analysis of quality indicators from the four accredited hospitals. Scrivens (1997, p. 5) defined a quality indicator as, 'a quantitative measure that can be used as a guide to monitor and evaluate the quality of important patient care and support services activities'. Also, a rate-based indicator measures trends over time. Scrivens (1997) claims that indicators may measure an outcome 'what happens to a patient after something is done' or process of care 'activities performed on patients'. There are mixed

views found in literature, but most of the studies agree that quality indicators are important to improve the quality of health care services when preparing for accreditation (Almoajel, 2012).

The Saudi MOH launched a developmental program to promote patient-centred healthcare services in an endeavour to improve the performance level in the most crowded health facilities which is in line with the MOH's strategic plan to develop integrated and comprehensive health care in the Kingdom. In this study, the researcher focused on four emergency key performance indicators in four hospitals.

The indicators which are shown in Table 4.6 are as follows:

- Length of stay in ER for each triage level.
- Waiting time in ER for each triage level.
- Waiting time from decision to ICU.
- Waiting time from decision to ward.

ED indicators were collected from the four sample accredited public hospitals. They were collected over the period from December 2015 to November 2016.

4.11.1 Statistical Analysis of Key Performance Indicators

The purpose of the data analysis of phase 3 is to address the research sub-question: 'Is accreditation associated with better performance in ED quality process indicators?' The KPIs in Table 4.6 based on the Canadian Emergency Triage System (CTAS) were analysed to compare the quality of the patient-centred programs in the emergency departments at the four hospitals.

Table 4.6: Summary of KPIs and Benchmarks

KPI category	Definition	Data set	Number of repeated measures	Triage level	Benchmark	
					Hours: Min	Hours
Length of Stay	Average waiting time from registration of patient in emergency department to the decision of admission or discharge	1	12	CTAS 1	6:00	6.00
		2	12	CTAS 2	6:00	6.00
		3	12	CTAS 3	6:00	6.00
		4	12	CTAS 4	4:00	4.00
		5	12	CTAS 5	4:00	4.00
Waiting time	Average waiting time from registration of patient to patient seen by physician	6	12	CTAS 1	0:05	0.083
		7	12	CTAS 2	0:15	0.250
		8	12	CTAS 3	0:30	0.500
		9	12	CTAS 4	1:00	1.00
		10	12	CTAS 5	2:00	2.00
Decision to ICU	Average waiting time from decision to admit to ICU	11	12	Not applicable	4:00	4.00
Decision to Ward	Average waiting time from decision to admit to ward	12	12	Not applicable	4:00	4.00

[a] KPI = Key performance indicator; [b] CTAS = Canadian Triage and Acuity Scale: 1 = Resuscitation; 2 = Emergent; 3 = Urgent; 4 = Less Urgent; 5 = Non-Urgent (Elkum et al., 2011). [c] Benchmark = Target waiting time, specified by the Canadian Emergency Triage System.

The CTAS is a well-recognised and validated triage system that prioritizes patient care by severity of illness (Elkum, Barrett, & Al-Omran, 2011). Table 4.6 summarises the data that were analysed with respect to the four categories of KPI and the five levels of the CTAS scale with 12 repeated measures at monthly intervals for each KPI category. The researcher extracted 12 sets of patients' average waiting times (measured as hours and minutes) from the reports provided by the quality management departments at each hospital. These reports summarized the average waiting times each month for the 12-month period from December 2016 (baseline) to November 2017 (endpoint) classified by KPIs with no missing values. For the purpose of statistical analysis, the times were converted from hours and minutes into hours and decimal fractions of hours.

A simple way to analyse patient waiting times is to compare the mean value of each set of 12 repeated measures against the corresponding KPI benchmark listed in Table 4.6. A one-sample one-tailed t-test could be conducted on each data set, using the research hypothesis that there will be compliance with the quality criteria, reflecting good performance if the mean waiting time is significantly less the waiting time specified by the benchmark. Although this method appears intuitively to be appropriate, it is incorrect because the main assumptions of inferential statistics are violated. Replicate measurements that contribute to a mean value must be independent from each other and must be selected randomly from a given population (Hurlbert, 2009). However, the repeated measures of the average waiting times collected from the patient population in the emergency department at monthly intervals for 12 months were neither independent, nor were they collected by random sampling.

The repeated measures were pseudo-replicated at the temporal and sacrificial levels. Temporal pseudo-replication refers to the use of repeated measures collected at fixed intervals within a time-series to compute mean values assuming that the repeated measures are independent and randomly sampled. Sacrificial pseudo-replication refers to the pooling or averaging of independent measurements prior to inferential statistical analysis, thus sacrificing some of the variance that is present in the un pooled measurements (Hurlbert, 2009). Both types of pseudo-replication lead to erroneous results due to the failure of inferential statistical analysis to properly incorporate the true structure of the randomness within the data.

Pseudo-replication is a widespread affliction among healthcare and medical researchers conducting longitudinal studies involving the collection of repeated measures within a time-series (Drummond & Vowler, 2012; Freeberg & Lucas, 2009; Lazic, 2010; Ranstam, 2012). The researcher avoided the scourge of temporal and sacrificial pseudo-replication by not computing the mean values of the repeated measures of the average waiting times. A more

advanced statistical method was used to compare each set of repeated measures against their corresponding KPI benchmarks.

First, a time-series plot (waiting times vs. months) was constructed for each of the twelve data sets listed in Table 4.5 at each of the four hospitals. Second, the number of months during the one-year time period where the waiting times were less than the KPI benchmarks (i.e., the frequencies of compliance with the benchmarks) were computed. The frequencies of compliance were cross-tabulated between the four hospitals, the four KPI categories, and the five triage levels. The cross-tabulated frequencies were analysed to determine if the frequencies of compliance were dependent on the hospital using Pearson's chi-square test However, the chi-square test only determines if the observed associations between the categories in the rows and the columns of a cross-tabulation deviate from the associations expected by random chance. The p-value of the chi-square does not measure the importance or strength of the relationship between categorical variables, especially when non-random sampling was used to collect the data (Agresti, 2013). The researcher complied with the statements issued by the American Statistical Association (ASA) asserting that $p < .05$ does not reflect the importance of the results, and that p-values should not be the only statistic that is interpreted to draw scientific conclusions or to make policy decisions (McShane & Gal, 2017; Wasserstein & Lazar, 2016; Wasserstein, Schirm, & Lazar, 2019). Cramer's V was the effect size statistic used to measure the importance of the statistical associations between the categorical variables. The interpretation of Cramer's V was: 0.10 = small effect); 0.30 = medium effect; and 0.50 = large effect (Agresti, 2013).

4.12 Data Management

Different types of data were collected, including questionnaire survey responses, audio-taped recordings, transcripts of interviews and clinical indicators reports. The researcher was systematic and alert in dealing with each type format of the data. The researcher used a student diary to allocate each specific activity related to data collection and analysis on its specific page, recording day and time. For the quantitative survey, the researcher labelled each questionnaire with a specific number for each participant and a letter for each hospital. All completed surveys were scanned into electronic files types. Although scanning large volumes of paper surveys is a demanding task, the researcher was diligent in ensuring all hard documents were saved electronically. Then, electronic files were sent and saved into the LabArchives which is the most innovative and accredited research notebook software available at Monash University and La Trobe University. For the interviews, the researcher recorded all interviews with an ultra-sensitive digital voice recorder to ensure all voices were captured clearly. It has an internal memory that can hold up to 100 hours of recording time and organises files into many folders for easy navigation. All the recorded audio-files were saved in a specific audio-file format and sent to LabArchives, taking into account the necessity and importance of anonymity and confidentiality of each interviewed patient. Each file was designated with the time and place of data collection but there was no identifying information. The transcripts of the interviews were also saved in LabArchives. The researcher and supervisors only have the right to access the stored data. According to La Trobe University regulations and guidelines, the data will be kept for five years and will then be discarded.

4.13 Ethical Considerations

Fundamentally, ethical principles for any researcher are about the relationship between researchers and participants. This research was based on a strong ethical foundation that applied to all characteristics of the study. The requirements of The National Statement on

Ethical Conduct in Human Research were compatible with the Monash University Human Research Ethics Committee (MUHREC) regulations and guidelines which applied to this study. The study was approved by MUHREC and the official approval certificate was received (see appendix C). Also, approval was obtained from both the Directorate-General of Medical Research (GDMR) in the Saudi Arabian Ministry of Health and Institutional Review Board at King Fahad Medical City (IRB-KFMC) to commence the study (see appendix D). The MOH is the largest national legislative and consecutive body in control of all public hospitals in Saudi Arabia. Many ethical issues were addressed carefully prior to commencing the study in accordance with MUHREC regulations and guidelines.

4.13.1 Anonymity and Confidentiality

Guaranteeing the anonymity and confidentiality of the data gathered from the participant is central to ethical practices in medical research. The researcher was alerted about both the health professionals' and patients' responses as the main human subjects of this study. The participants were not required to write their names on the questionnaire nor identify any personal information during the interviews. Information obtained in the participant part of the questionnaire did not include any questions that could identify an individual, location or organisation. The concept of anonymity was comprehensively explained in the explanatory statements (see appendices E & F). All the returned questionnaires were coded using unique numbers to assure the participant that the information is for data entry only. No signature or written words were required in the completed questionnaire to guarantee confidentiality. To maintain a high level of participant confidentiality during the interview, unique codes were used instead of using identifiable names. Only the principal investigator (main supervisor) and the researcher are authorised to access all types of data collected from the study participants. During the data collection journey, the returned questionnaires were placed in a secure locked cabinet in each of the hospitals used in this study. The researcher's personal computers and

recorders were password protected. It is also noted in the explanatory statement that the findings of the study would be disseminated at conferences, posters and published articles in scientific journals. Therefore, only aggregated data would be outlined in reports.

4.13.2 Beneficence, Non-maleficence and Level of Risk

Two fundamental core principles underpinning both health care practices and research are beneficence (do good) and non-maleficence (do not harm) (Curtis & Drennan, 2013). However, the basic stance is that the researcher should work for the benefit of the patient from a health perspective. Therefore, the researcher was careful not to cause any unnecessary harm, distress or discomfort to the study participants. Harm and discomfort can be physical, psychological, social, legal, or economic. Harm and discomfort is perceived to be higher in qualitative studies like patient interviews and focus groups than quantitative data collection (Curtis & Drennan, 2013). In this study, the patient interview policy and procedures were reviewed by MUHREC and approved.

The researcher introduced different strategies to ensure the level of risk of the research remained low. The researcher, in collaboration with the head nurse in the EDs or internal wards, approached the eligible patients for this study and then used a private room to conduct the interview. The aim was to recruit a range of patients with minor conditions and who were discharged, or complex conditions and who were admitted. It was considered inappropriate to attempt to interview them immediately upon leaving the ED and strategies were designed to interview them at another suitable subsequent time. The time of the interviews was organised so as not to interrupt the patient's health care or the health care providers' work. An explanatory statement was given to each patient participant which included detailed information on the study. Patient and health professionals were prompted to contact the researchers with any concerns via the phone numbers or email addresses listed in the information sheet.

Undertaking research with Saudi Arabian female patients involved sensitive cultural issues between the researcher and the participants. The researcher is a Saudi Muslim and is aware of the ethical and cultural issues that might arise during the process of the study. In order to assist female participants to be included in the study, a qualified female research assistant was trained by the researcher to conduct the semi-structured interviews with female patients. In this regard, a socially safe room was made available in each hospital for the interviews with the female patients. Patients and health professionals were informed clearly that they were free to withdraw from further participation at any time if they felt the questions were too personal or intrusive. However, no participants, health professionals or patients either refused to answer a question or chose to withdraw during this study.

4.13.3 Right to Self-determination, Disclosure and Consent

Respect for the study population's dignity in relation to their choice to self-determination and full disclosure is ranked as the second ethical principle after beneficence (Polit & Beck, 2008). The principle of self-determination means that participants have the right to consent voluntarily and that they are under no obligation to participate in the research and can withdraw without penalty (Polit & Beck, 2008). Participants have the right to ask questions, refuse to give information or withdraw from the study. This information was made available in the participant information statements for both health professionals and patients. Full disclosure means that the participants were informed explicitly about what the research involves, why they had been chosen for this research, and possible benefits and risks that would minimise the perceptions of coercion (Polit & Beck, 2008). The researcher adhered to the guidelines to ensure people's right to make an informed, voluntary decision to participate which required full disclosure. Furthermore, participants were informed that they have the right to ask any question or require further clarification related to the study. Also, participants were notified in explanatory statements no payment will be provided for their engagement in the study.

Informed consent means that participants have appropriate information about the study that enables them to voluntarily consent or decline to participate (Polit & Beck, 2008). Regarding health professionals, consent was implied by completion and submission of the anonymous survey after reading the participant information sheet. Consent was recorded for interviews after patients read the participant information sheet and consent form. The process was that the consent form was handed to the researcher in the ED before the patient was discharged or transferred to the ward. The interviewed patients received a copy of their signed consent form to keep for future reference (see appendix G).

4.14 Conclusion

A mixed method design involving three phases to embed qualitative and quantitative data was used to pursue the main question and sub-questions of the thesis. This design was deemed to be the best way to evaluate the evidence of structure, processes and patient outcomes at emergency departments in accredited hospitals in Saudi Arabia. The study comprised three distinctive phases using a questionnaire for health professionals to collect quantitative data in phase 1. Statistical clinical report analysis also followed in phase 3. The semi-structured interviews for patients were collated to explore their care experiences in the ED in relation to the quality of health services and accreditation in phase 2. In this chapter, study contexts, sampling techniques, data collection strategies, data analysis, data quality, ethical considerations were presented. The methodologies of the three study phases were meticulously designed to complement each other. The next two chapters present the results.

Chapter 5: Quantitative Results - (Phase 1 - Questionnaire Survey)

5.1 Introduction

The first section of this chapter presents the results of the questionnaire survey in the following categories: 1) response rate; 2) demographic characteristics of participants; 3) descriptive statistics; 4) relationships between quality processes and quality outcomes, 5) PLS-SEM results, 6) comparison of quality variables between participants and 7) comparison of quality variables between occupational categories. The second section of this chapter presents the results of the four ED quality process indicators.

5.2 Response Rate

The instrument of this study underwent several revisions to ensure proper wording, short questions and avoidance of ambiguity to increase the respondents' response rate. Time to complete the survey was also taken into consideration. Therefore, the final questionnaire was kept as short as possible and was designed to be answered in less than 20 minutes.

The procedure was to target each hospital separately for the three phases of this study. Phase one was the survey instrument for health professionals. In order to approach the target population sequentially in the four provinces, each hospital was given one month for the data collection. On September 2017, the first package of paper-based surveys was distributed in hospital 1, followed by hospitals 2, 3 and 4 until December 2017. Reminders were sent through the assigned managers or during the departmental weekly meeting with ED employees during the allocated month for each hospital. Maximising the response rate was an important stage in this study to ensure strong data results.

The researcher distributed 384 surveys to the targeted employees from the four sample hospitals. The population count was confirmed through the academic and training department in each hospital (see Table 5.1). The initial overall response rate before the surveys were checked was 73.4% (n=279). The final response rate after several surveys had been eliminated by the researchers due to omitted items by the respondents was 73% (n=277), with relatively consistent response rates between the four hospitals.

Table 5.1: Targeted Hospitals, Population and Response Rate

	Hospital	Total targeted population	Returned surveys	Completion response rate
H	King Khalid Hospital, Hail City.	87	63	72.4%
B	King Fahad Specialist Hospital, Buraidah City.	102	68	66.7%
U	King Saud Hospital, Unaizah City.	93	72	77.4%
R	King Salman Hospital, Riyadh City.	98	74	75.5%
	Total	380	277	73%

5.3 Demographic Characteristics of Participants

The first stage of the data analysis was to summarise the demographic characteristics of the participants. The frequencies (counts and percentages) of the mutually exclusive categories of the demographic characteristics that the 277 participants reported in the survey tool are summarized in Table 5.2. The frequencies of the participants who worked at each of the four hospitals were approximately equivalent, ranging from 22.7% (n = 63) in Hospital H to 26.6% (n = 74) in Hospital R. The nationality of the majority of the participants was non-Saudi (n = 236, 85.2%). Most of the participants (n = 207, 74.7%) were female. The ages of the

participants ranged from 30 to 55 years old. The most frequent age group was 30 to 40 years old (n = 122, 44.0%). The time that the participants had worked for or had been associated with an emergency department ranged widely from 1 to 30 years (*Mean* = 5.46; *SD* = 4.62). The most frequent time the participants had been in an emergency department was five years or less (n = 184, 66.4%).

Table 5.2: Demographic Characteristics of Participants (N = 277)

Characteristic	Category	Frequency	%
Hospital	H	63	22.7
	B	68	24.5
	U	72	26.0
	R	74	26.7
Nationality	Non-Saudi	236	85.2
	Saudi	41	14.8
Gender	Female	207	74.7
	Male	70	25.3
Age (Years)	< 30	106	38.3
	30 to 40	122	44.0
	41 to 55	43	15.5
	> 55	6	2.2
Time working for or associated with an emergency department (years)	1 to 5	184	66.4
	6 to 10	62	22.4
	11 to 20	28	10.1
	21 to 30	3	1.1
Time working for or associated with this emergency department (years)	1 to 5	200	72.2
	6 to 10	55	19.9
	11 to 20	19	6.9
	21 to 30	3	1.1
Highest medical degree	Diploma	28	10.1
	Bachelor degree	221	79.8
	Postgraduate diploma	11	4.0
	Master degree	12	4.3
	PhD degree	2	0.7
	Other	3	1.1
Occupation	Nurse	187	67.5
	Physician	74	26.7
	Director *	15	5.4
	Head Nurse	1	0.4

*Director of Emergency Department/Director of Quality Management/Quality coordinator

The time that the participants had worked for or had been associated with this emergency department ranged widely from 1 to 30 years (*Mean* = 4.70; *SD* = 4.23). The most frequent time the participants had been in this emergency department was five years or less (*n* = 200, 72.2%). The highest qualification of the majority of the participants was a Bachelor degree (*n* = 221, 79.8%) followed in order of frequency by a Diploma (*n* = 28, 10.1%); a Master degree (*n* = 12, 10.1%); a Postgraduate diploma (n = 11, 4.0%); another qualification (*n* = 3, 1.1%); and a PhD degree (*n* = 2, 0.7%). Most of the participants reported their occupational category was Nurse (*n* = 187, 67.5%) followed in order of frequency by Physician (*n* = 74, 26.7%); Director of Emergency Department/Director of Quality Management/Quality Coordinator (*n* = 15, 5.4%); and Head Nurse (*n* = 1, 0.4%).

5.3.1 Cross-tabulation of Participants' Characteristics

A statistical analysis was conducted to determine if the demographic characteristics of the participants varied between the four hospitals. Table 5.3 presents a cross-tabulation of the frequencies of the Saudi and non-Saudi participants at the four hospitals. Most of the Saudi participants (*n* = 21, 51.2%) were at Hospital H, whilst only a few Saudi participants were at Hospital R (*n* = 2, 4.9%). Hospital R had the greatest frequency of non-Saudi participants (*n* = 72, 30.5%) whilst Hospital H had the smallest frequency of non-Saudi participants (*n* = 42, 17.78%). A Pearson's chi-square test indicated that there was a significant association or dependency between the nationality of the participants and the hospital where they worked (χ^2 (3) = 33.65, $p < .001$; Cramer's $V = .349$).

Table 5.3: Cross-tabulation of Nationality vs. Hospital (N = 277)

Nationality		Hospital			
		H	B	U	R
Saudi	Frequency	21	3	15	2
	% within Nationality	51.2%	7.3%	36.6%	4.9%
Non-Saudi	Frequency	42	65	57	72
	% within Nationality	17.8%	27.5%	24.2%	30.5%

Table 5.4 presents a cross-tabulation of the frequencies of the male and female participants at the four hospitals. Hospital U had the greatest frequency of female participants (n = 58, 27.0%) whilst Hospital H had the smallest frequency of female participants (n = 37, 17.9%). Hospital H had the greatest frequency of male participants (n = 26, 37.1%) whilst Hospital B had the smallest frequency of male participants (n = 13, 18.6%). A Pearson's chi-square test indicated that there was a significant association or dependency between the gender of the participants and the hospital where they worked ($\chi 2$ (3) = 11.40, $p < .001$; Cramer's V = .203).

Table 5.4: Cross-tabulation of Gender vs. Hospital (N = 277)

Gender		Hospital			
		H	B	U	R
Female	Frequency	37	55	58	57
	% within Gender	17.9%	26.6%	27.0%	27.5%
Male	Frequency	26	13	14	17
	% within Gender	37.1%	18.6%	20.0%	24.3%

No significant associations or dependencies were found between the four hospitals and the other demographic characteristics of the participants (i.e., age, time working in emergency department, highest medical degree, and occupational category). Therefore, the cross-tabulations are not presented.

In summary, cross-tabulation results were constructed to explore the associations between the frequencies in each category of the demographic characteristics and showed that there is a moderately strong relationship only between nationality and gender and hospital with at least 95% confidence in the findings.

5.4 Descriptive Statistics

The descriptive statistics included mean scores ± 95% confidence intervals for the questionnaire items. The interval bar charts were interpreted using the method described by Cumming & Finch (2005) in the article entitled "Inference by eye: Confidence intervals and

how to read pictures of data". If the 95% confidence intervals (*CI*) for two mean scores did not strongly overlap, then the two mean scores were assumed to be significantly different from each other.

5.4.1 Years of Experience and Occupational Categories

Figure 5.1 compares the mean length of time ± 95% confidence intervals (*CI*) for each of the four occupational categories of participants who had worked for or were associated with this emergency department, measured to the nearest year. The 15 directors (Mean = 9.54 years, 95% *CI* = 4.11, 14.96) and the head nurse (Mean = 12.00 years) reported that, on average, their involvement with their emergency department was longer than the 186 nurses (Mean = 4.32 years, 95% *CI* = 3.71, 4.73) and the 74 physicians (Mean = 4.89 years, 95% *CI* = 3.91, 5.88). As expected, administrators appeared to have spent more time working in or associated with the emergency department than the care staff.

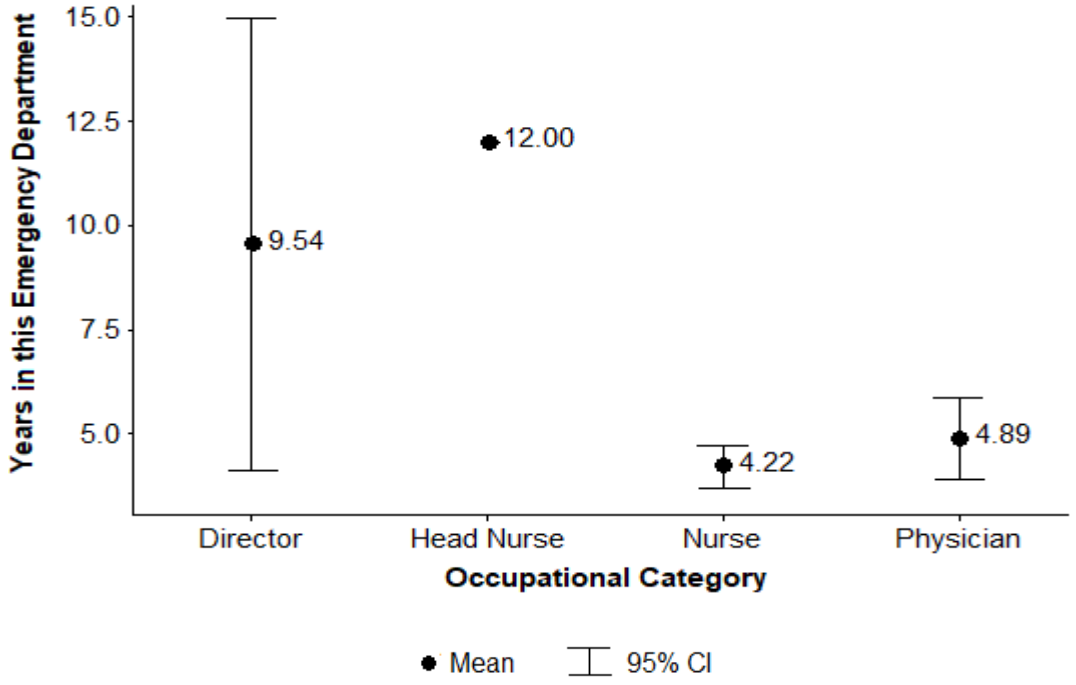

Figure 5.1: Years in Emergency Department vs. Occupational Categories (N = 277)

5.4.2 Involvement in Accreditation Process

Figure 5.2 displays a frequency distribution histogram of the responses to the survey question 'How do you judge your involvement in the accreditation process on a scale from 1 to 10?' A score of 1 indicated little involvement, while 10 indicated significant involvement. The scores endorsed for the Accreditation Scale encompassed all points from 1 to 10. The bell-shaped histogram reflects a normal distribution (*Mean* = 6.80; *SD* = 1.74). The skewed histogram reflects that this distribution is not normal. Both the Kolmogorov-Smirnov and Shapiro-Wilk tests indicated significant deviation from normality ($p < .05$). The score for the majority of the participants ($n = 213$, 76.9%) was greater than 5 (i.e., between 6 and 10) implying that most of the participants judged that they had a moderate to high level of involvement in the accreditation process.

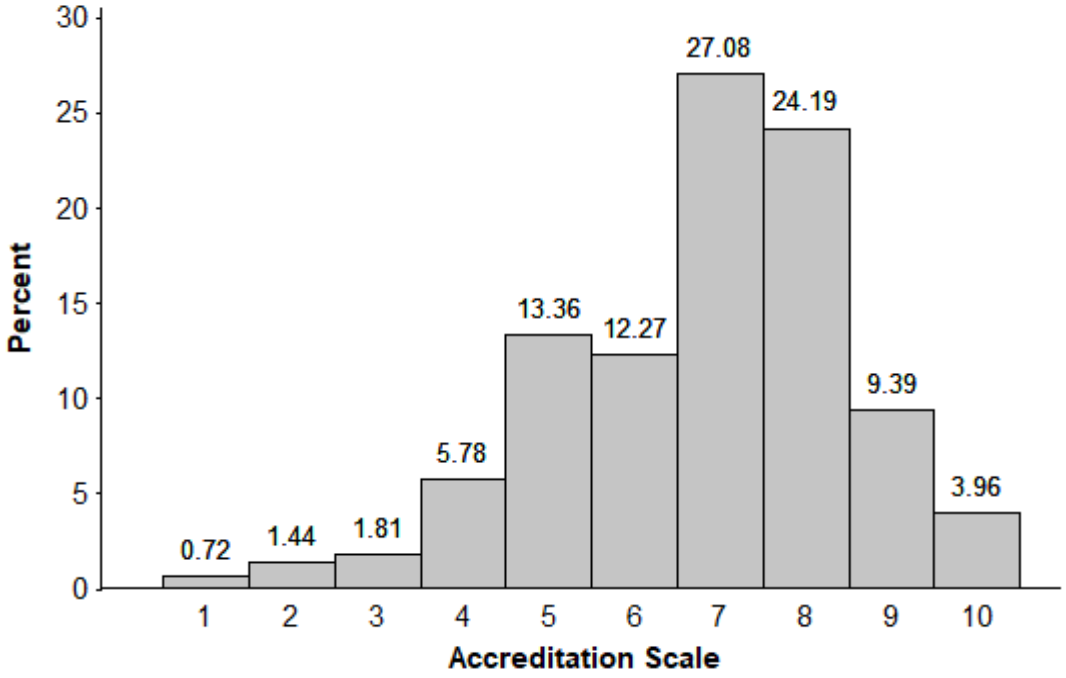

Figure 4 5.2: Distribution of Involvement in Accreditation (N = 277)

5.4.3 Accreditation Process and Occupational Categories

Figure 5.3 compares the mean score for the Accreditation Scale ± 95% confidence intervals (*CI*) between the four occupational categories of participants. The 15 directors (*Mean* = 8.83, 95% *CI* = 8.36, 9.51) and the head nurse (*Mean* = 9.00) judged that, on average, their involvement in the accreditation process was greater than the 186 nurses (*Mean* = 6.60, 95% *CI* = 6.38, 6.83) and the 74 physicians (*Mean* = 6.82, 95% *CI* = 6.35, 7.29). As expected, administrators appeared to be more involved in the accreditation process than the care staff.

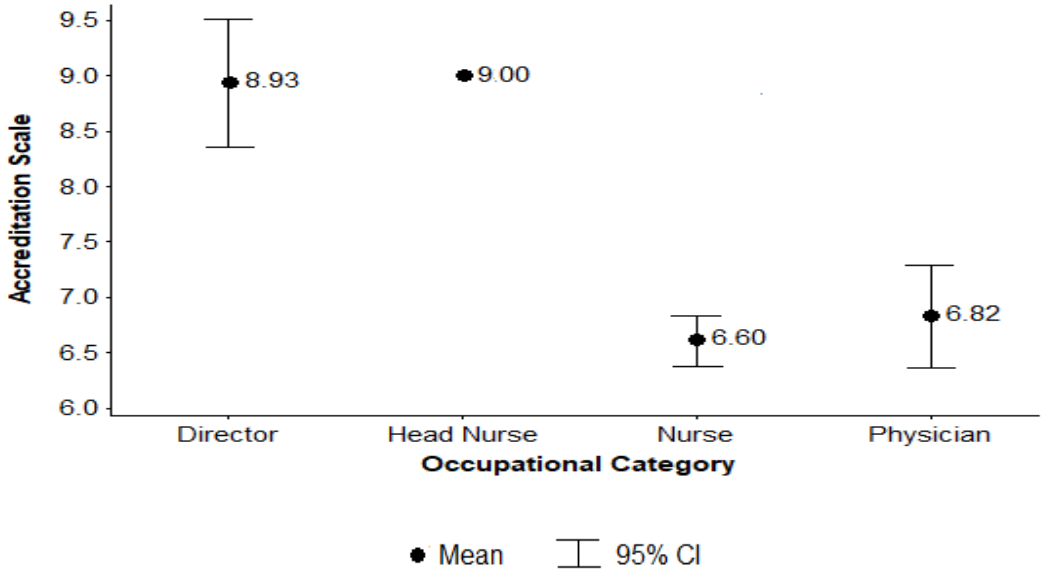

Figure 5.3: Involvement in Accreditation vs. Occupational Categories (N=277)

5.4.4 Accreditation Scale

Figure 5.4 compares the mean score for the Accreditation Scale ± 95% confidence intervals (*CI*) between the four hospitals. The 68 participants at Hospital 2 judged that, on average, they had a greater involvement in the accreditation process (*Mean* = 7.41, 95% *CI* = 7.12, 7.70) than the 63 participants at Hospital 1 (*Mean* = 6.30, 95% *CI* = 5.77, 6.84); the 72 participants at Hospital 3 (*Mean* = 6.49; 95% *CI* = 6.10, 6.87) and the 74 participants at Hospital 4 (*Mean* = 6.96; 95% CI = 6.55, 7.36).

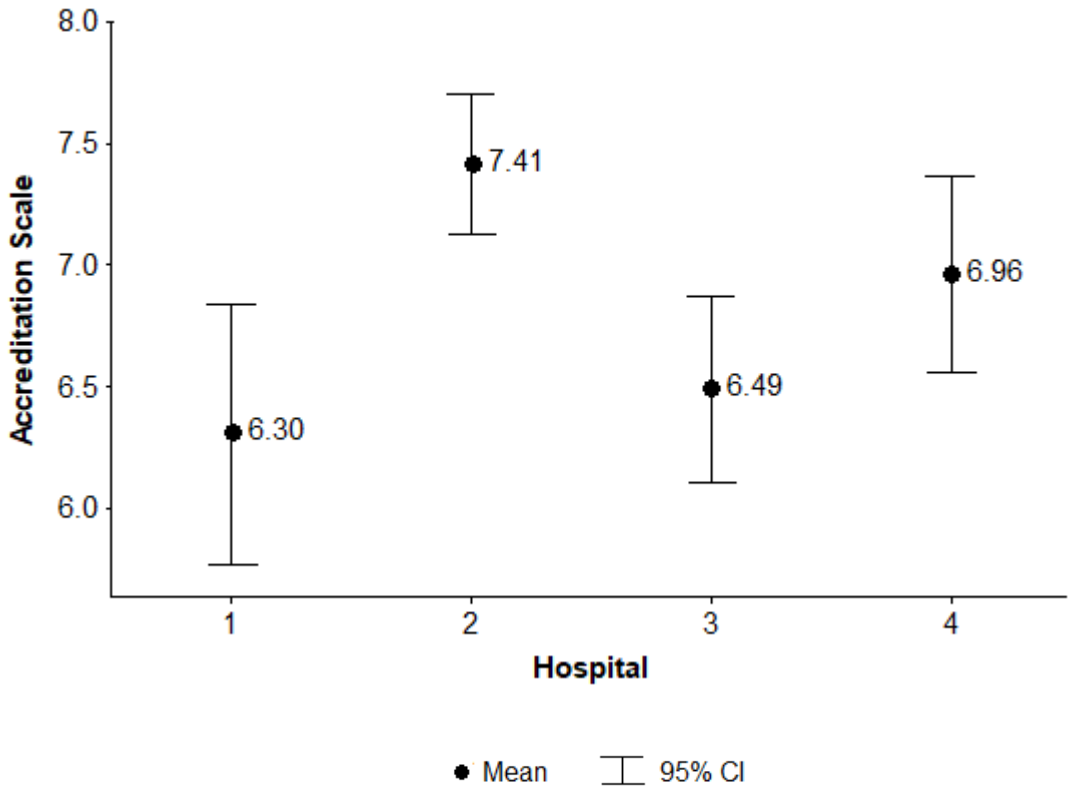

Figure 5.4: Involvement in Accreditation vs. Hospitals (N = 277)

5.5 Internal Consistency Reliability

Table 5.5 presents the values of Cronbach's alpha for the seven scales used in the survey tool.

Table 5.5: Reliability Analysis

Scale	Number of Items	Cronbach's alpha
Leadership	9	.928
Strategic Quality Planning	5	.924
Human Resource Utilization (Training)	5	.876
Quality Management	5	.904
Quality Results	4	.894
Customer (Patient) Satisfaction	7	.925
Accreditation Impact	11	.942

The values of Cronbach's alpha ranged from .876 to .942, indicating excellent reliability for the measurement tools.

5.6 Leadership

The leadership scale was measured with the survey tool using the nine items listed in Table 5.6. The descriptive statistics (*Mean* and *SD*) for each item were measured on a 5-point scale, and the results of the reliability analysis (Cronbach's *alpha* if item deleted) are also presented for each item. The frequency histogram of the mean scores for the 277 respondents in Figure 5.5 was not a bell-shaped curve, reflecting deviation from normality. Both the Kolmogorov-Smirnov and Shapiro-Wilk tests were statistically significant ($p < .05$), indicating that this scale was not normally distributed.

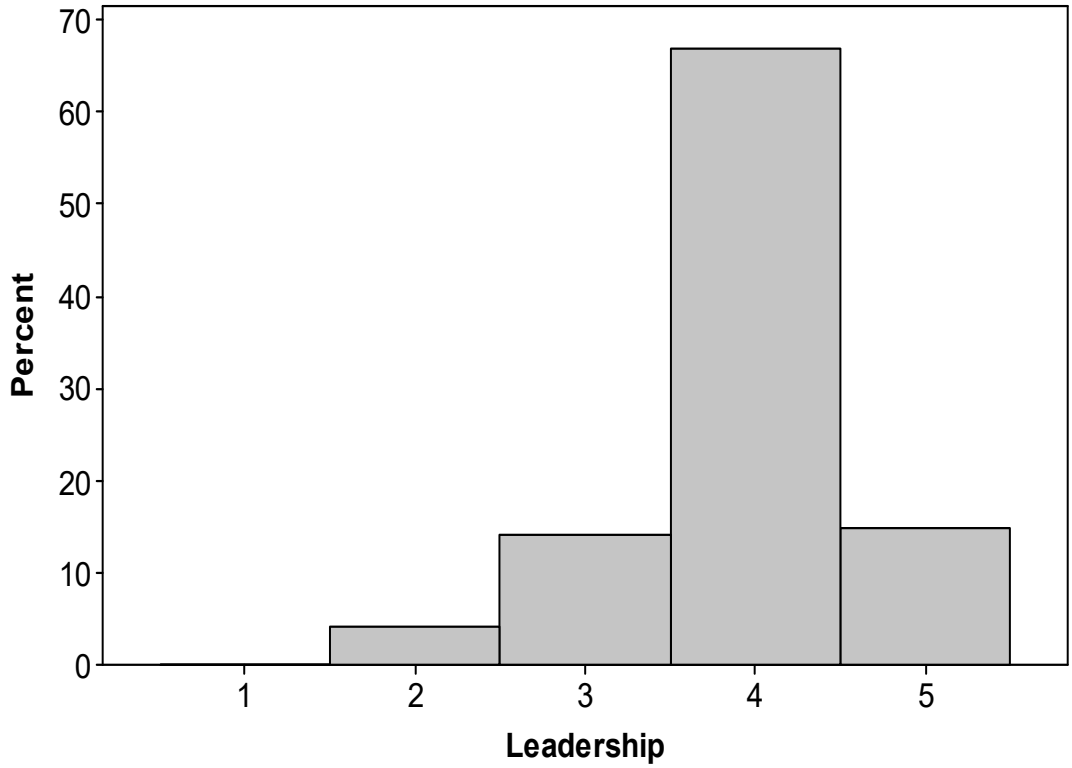

Figure 5.5: Distribution of Leadership (N = 277)

A statistical comparison of the mean scores for each questionnaire item provided by the respondents at each hospital measured at the ordinal level using a 5-point Likert scale was not conducted (e.g. using ANOVA) because the scores for single questionnaire items measured with the 5-point Likert scale are subject to measurement error and are not reliable. The

interpretation of single item scores is not recommended by statisticians (Sarstedt, Diamantopoulos, & Salzberger, 2016). It is essential to combine the scores for multiple items (e.g. by averaging or addition) in order to operationalize interval level variables before conducting statistical analysis (Carifio & Perla, 2007).

The scores for each item used to measure the quality of leadership were similar (*Mean* = 3.91 to 3.94, *SD* = 0.75 to 0.88). Cronbach's *alpha,* if each item was deleted, ranged from 0.91 to 0.92. The overall score for leadership was just above the mid-point of the 5-point scale (*Mean* = 3.92, *SD* = 0.63) implying that, on average, most of the respondents agreed that the leaders of the ED demonstrate the identified leadership activities. The lowest score was obtained for allocation of resources (Table 5.6)

Table 5.6: Measurement of Perceptions of Leadership (N = 277)

Item	*Mean*	*SD*	Cronbach's alpha if item deleted
01. The ED leaders provide highly visible leadership in maintaining an environment that supports quality improvement.	3.94	0.81	0.91
02. The ED management is a primary driving force behind quality improvement efforts.	3.94	0.79	0.92
03. The ED leaders allocate available departmental resources (e.g., finances, people, time, and equipment) to improve quality.	3.79	0.88	0.92
04. The ED leaders consistently participate in activities to improve the quality of care and services	3.94	0.78	0.91
05. The ED leaders have articulated a clear vision for improving the quality of care and services.	3.92	0.75	0.91
06. The ED leaders have demonstrated an ability to manage the changes (e.g., organizational, technological) needed to improve the quality of care and services.	3.91	0.75	0.92
07. The ED leaders have started to act on suggestions to improve the quality of care and services.	3.96	0.77	0.91

08. Based on the accreditation results, ED leaders have a thorough understanding of how to improve the quality of care and services.	3.94	0.79	0.92
09. The ED leaders generate confidence that efforts to improve quality will succeed.	3.94	0.79	0.91

5.7 Strategic Quality Planning

The strategic quality planning scale was measured with the survey tool using the six items listed in Table 5.7. The descriptive statistics (*Mean* and *SD*) for each item were measured with a 5-point scale and the results of the reliability analysis (Cronbach's *alpha* if item deleted) are also presented for each item in Table 5.7. The frequency histogram of the mean scores for the 277 respondents displayed in Figure 5.6 was not a bell-shaped curve, reflecting deviation from a normal distribution. Both the Kolmogorov-Smirnov and Shapiro-Wilk tests were statistically significant ($p < .05$) indicating that this scale was not normally distributed.

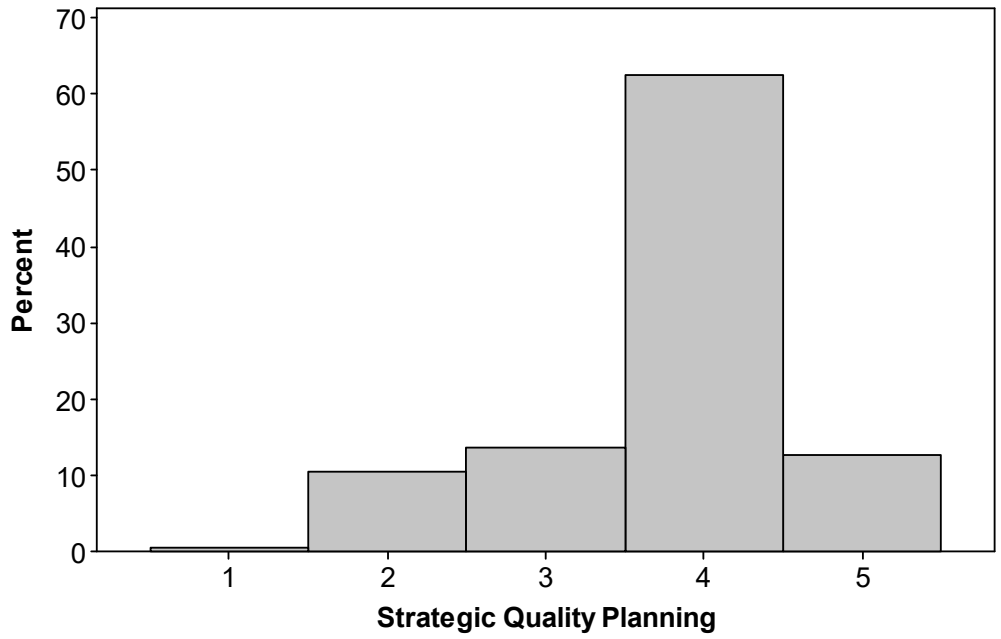

Figure 5.6: Distribution of Strategic Quality Planning (N = 277)

The scores for each item used to measure strategic quality planning were similar (*Mean* = 3.52 to 3.87, *SD* = 0.87 to 0.95). Cronbach's *alpha,* if each item was deleted, ranged from 0.904 to 0.917. The overall score for strategic quality planning was just above the mid-point of the 5-point scale (*Mean* = 3.71, *SD* = 0.78) implying that, on average, most of the respondents agreed with the items. The respondents were less positive about having adequate time to plan for and test quality improvements with a mean of 3.52.

Table 5.7: Measurement of Perceptions of Strategic Quality Planning (N = 277)

Item	*Mean*	*SD*	Cronbach's alpha if item deleted
10. ED staff are given adequate time to plan for and test quality improvements.	3.52	0.90	0.91
11. Each unit and work group within this ED maintains specific goals to improve quality.	3.71	0.87	0.90
12. The hospital's quality improvement goals are known throughout your ED.	3.71	0.95	0.91
13. ED staff are involved in developing plans for improving quality.	3.74	0.93	0.91
14. Patients' expectations about quality play a key role in setting priorities for quality improvement in the ED.	3.74	0.94	0.91
15. ED staff play a key role in setting priorities for quality improvement through representation in the ED department organizational chart.	3.87	0.92	0.90

5.8 Human Resource Utilisation (Training)

The Human Resource Utilisation (training) scale was measured with the survey tool using the five items listed in Table 5.8. The descriptive statistics (*Mean* and *SD*) for each item were measured with a 5-point scale and the results of the reliability analysis (Cronbach's *alpha,* if

each item was deleted) are also presented for each item in Table 5.8. The frequency histogram of the mean scores for the 277 respondents displayed in Figure 5.7 was not a bell-shaped curve, reflecting deviation from a normal distribution. Both the Kolmogorov-Smirnov and Shapiro-Wilk tests were statistically significant ($p < .05$) confirming that this scale was not normally distributed.

Figure 5.7: Distribution of Human Resource Utilisation (N = 277)

The scores for each item used to measure human resource utilisation (training) were similar (*Mean* = 3.34 to 3.86, *SD* = 0.82 to 1.04). Cronbach's *alpha,* if each item was deleted, ranged from 0.837 to 0.880. The overall score for human resource utilisation was just above the mid-point of the 5-point scale (*Mean* = 3.70, *SD* = 0.73) implying that, on average, most of the respondents agreed with the items. The respondents were least positive about being rewarded and recognised for improving quality, with a mean of only 3.34.

Table 5.8: Measurement of Perceptions of Human Resource Utilisation (Training)

Item	*Mean*	*SD*	Cronbach's alpha if item deleted
16. ED staff are given education and training in how to identify and act on quality improvement opportunities based on recommendations from accreditation surveys	3.86	0.85	0.84
17. ED staff are given continuous education and training in methods that support quality improvement.	3.82	0.86	0.83
18. ED staff are given the necessary education and training (through education programs) to improve job skills and performance.	3.83	0.82	0.84
19. ED staff are rewarded and recognized (e.g., financially and/or otherwise) for improving quality.	3.34	1.04	0.88
20. Inter-departmental cooperation to improve the quality of services is supported and encouraged.	3.66	0.87	0.85

5.9 Quality Management

The Quality Management scale was measured with the survey tool using the five items listed in Table 5.9. The descriptive statistics (*Mean* and *SD*) for each item were measured with a 5-point scale and the results of the reliability analysis (Cronbach's *alpha* if each item was deleted) are also presented for each item in Table 5.9. The frequency histogram of the mean scores for the 277 respondents displayed in Figure 5.8 was not a bell-shaped curve, reflecting deviation from normality. Both the Kolmogorov-Smirnov and Shapiro-Wilk tests were statistically significant ($p < .05$) confirming that this scale was not normally distributed.

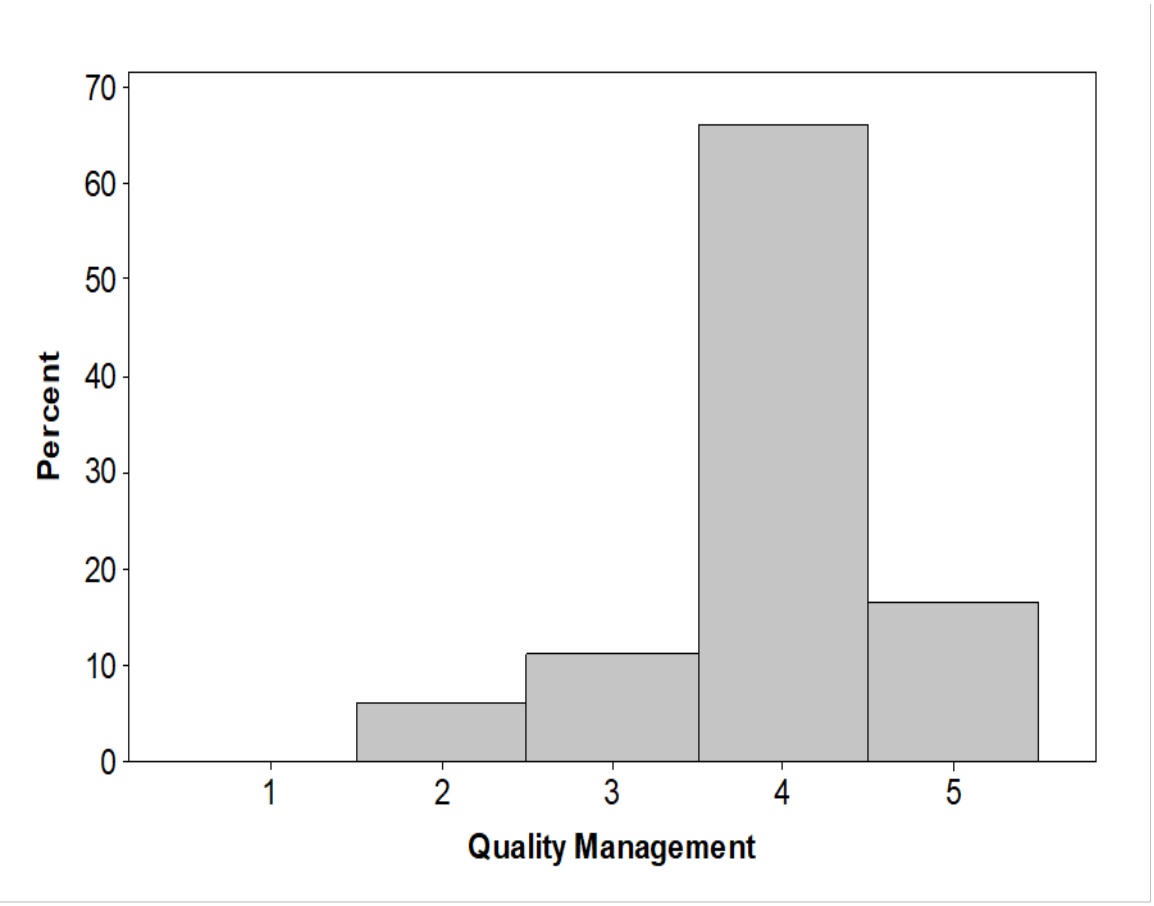

Figure 5.8: Distribution of Quality Management (N = 277)

The scores for each item used to measure quality management were similar (Mean = 3.74 to 4.05, SD = 0.78 to 0.85). Cronbach's alpha, if each item was deleted, ranged from 0.869 to 0.896. The overall score for quality management was above the mid-point, close to 4 (Mean = 3.92, SD = 0.69) implying that, on average, most of the respondents agreed with the items.

Table 5.9: Measurement of Perception of Quality Management

Item	*Mean*	*SD*	Cronbach's alpha if item deleted
21. The ED staff regularly check equipment and supplies to make sure they meet quality requirements.	4.05	0.83	0.89
22. The ED has effective policies to support the improvement of the quality of care and services (example: Five Rights Principle in Drug Administration).	3.97	0.80	0.86
23. The services that the ED provides are thoroughly tested for quality before they are implemented.	3.74	0.85	0.88
24. The ED management views quality assurance as a continuing search for ways to improve.	3.87	0.80	0.88
25. The ED management encourages staff to keep records of quality problems through documentation.	3.97	0.78	0.87

5.10 Quality Results

The Quality Results scale was measured with the survey tool using the four items listed in Table 5.10. The descriptive statistics (*Mean* and *SD*) for each item were measured with a 5-point scale and the results of the reliability analysis (Cronbach's *alpha* if each item was deleted) are also presented for each item in Table 5.10. The frequency histogram of the mean scores for the 277 respondents displayed in Figure 5.9 was not a bell-shaped curve, reflecting deviation from a normal distribution. Both the Kolmogorov-Smirnov and Shapiro-Wilk tests were statistically significant ($p < .05$) confirming that this scale was not normally distributed.

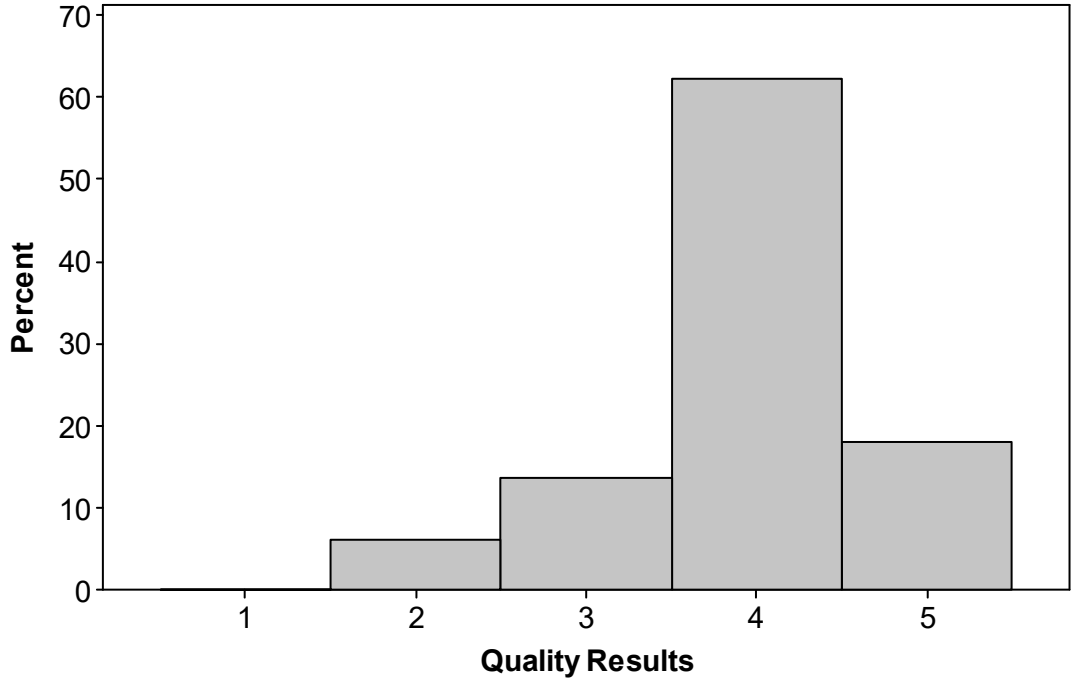

Figure 5.9: Distribution of Quality Results (N = 277)

The scores for each item used to measure quality results were similar (*Mean* = 3.81 to 3.89, *SD* = 0.79 to 0.85). Cronbach's *alpha,* if each item was deleted, ranged from 0.83 to 0.89 The overall score for quality results was just above the mid-point of the 5-point scale (*Mean* = 3.84, *SD* = 0.72) implying that, on average, most of the respondents agreed with the items.

Table 5.10: Measurement of Perceptions of Quality Results

Item	*Mean*	*SD*	Cronbach's *alpha* if item deleted
26. Over the past few years, the ED has achieved steady, measurable improvements in the quality of patient satisfaction.	3.81	0.83	0.85
27. Over the past few years, the ED has achieved steady, measurable improvements in the quality of care provided to patients.	3.81	0.82	0.83
28. Over the past few years, the ED has achieved steady, measurable improvements in the quality of services related to the triage system and waiting time provided by the department.	3.89	0.79	0.86
29. Over the past few years, the ED has maintained high-quality health services despite a staff shortage.	3.86	0.85	0.89

5.11 Customer (Patient) Satisfaction

The Patient Satisfaction scale was measured with the survey tool using the seven items listed in Table 5.11. The descriptive statistics (*Mean* and *SD*) for each item were measured with a 5-point scale and the results of the reliability analysis (Cronbach's *alpha,* if each item was deleted) are also presented for each item in Table 5.11. The frequency histogram of the mean scores for the 277 respondents displayed in Figure 5.10 was not a bell-shaped curve, reflecting deviation from a normal distribution. Both the Kolmogorov-Smirnov and Shapiro-Wilk tests were statistically significant ($p < .05$) confirming that this scale was not normally distributed.

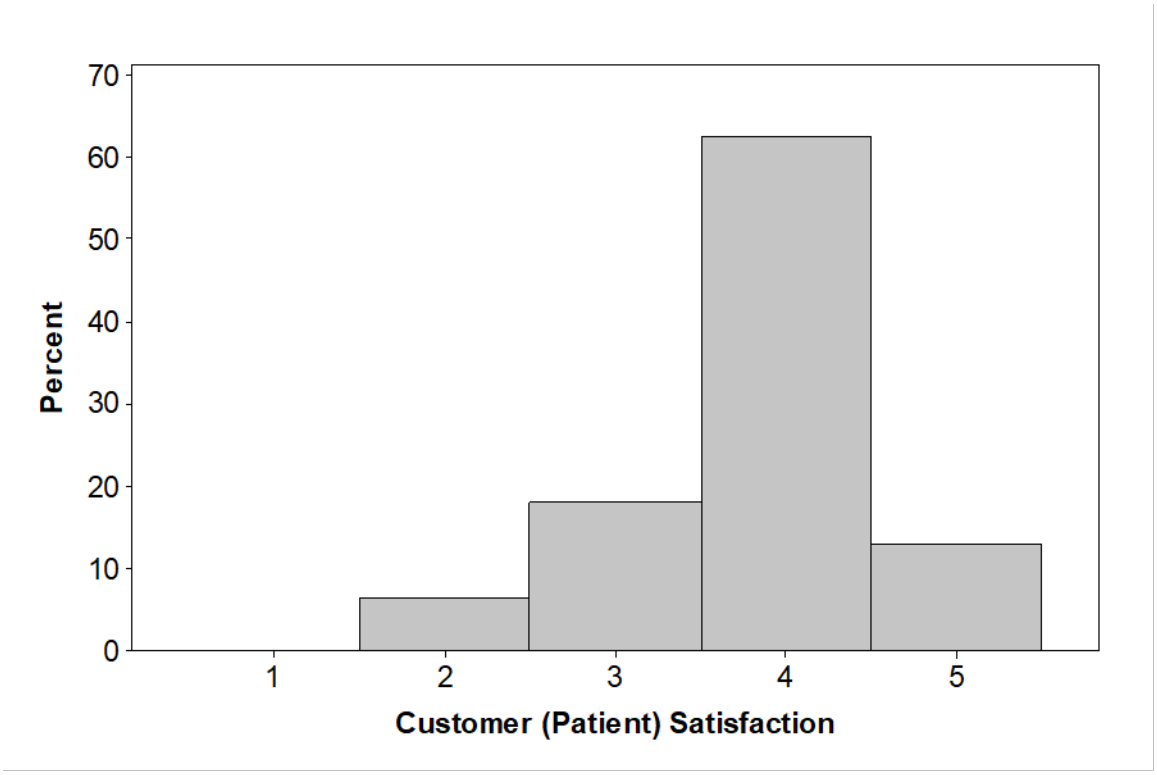

Figure 5.10: Distribution of Customer (Patient) Satisfaction (N = 277)

The scores for each item used to measure patient satisfaction were similar (*Mean* = 3.71 to 3.96, *SD* = 0.78 to 0.87). Cronbach's *alpha,* if each item was deleted, ranged from 0.912 to 0.918. The overall score for patient satisfaction was also just above the mid-point of the 5-point scale (*Mean* = 3.84, *SD* = 0.67) implying that, on average, most of the respondents agreed with the items and perceived that the level of patient satisfaction was relatively good. However, the estimates of the level of patient satisfaction could potentially be inflated by respondents who had the least satisfied patients (Mazor, Clauser, Field, Yood, & Gurwitz, 2002).

Table 5.11: Measurement of Perception of Customer (Patient) Satisfaction

Item	*Mean*	*SD*	Cronbach's alpha if item deleted
30. The ED does a good job of assessing current patient needs and expectations.	3.96	0.79	0.91
31. The ED does a good job of assessing future patient needs and expectations.	3.90	0.78	0.91
32. ED staff promptly resolve patient complaints.	3.93	0.80	0.91
33. Patients' complaints are studied to identify patterns and learn from them to prevent the same problems from reoccurring.	3.79	0.78	0.91
34. The ED uses data from patients to improve services.	3.81	0.84	0.91
35. Data on patient satisfaction are widely communicated to ED staff.	3.71	0.87	0.91
36. The ED uses data on patient expectations and/or satisfaction when designing new services.	3.79	0.82	0.91

5.12 Accreditation Impact

The eleven items in Table 5.12 were used to measure the Accreditation Impact scale. The descriptive statistics for each item and the results of the reliability analysis (Cronbach's alpha if each item is deleted) are also presented for each item in Table 5.12. The frequency histogram of the mean scores for the 277 respondents displayed in Figure 5.11 was not a bell-shaped curve, reflecting deviation from normality. Both the Kolmogorov-Smirnov and Shapiro-Wilk tests were statistically significant ($p < .05$) confirming that this scale was not normally distributed.

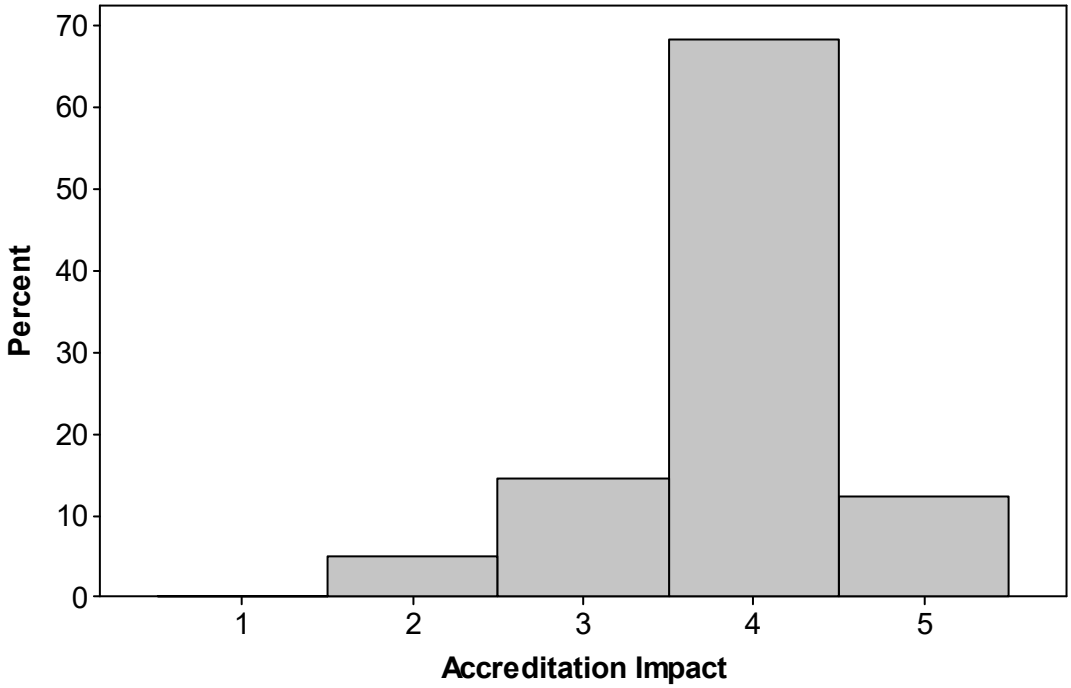

Figure 5.11: Distribution of Accreditation Impact (N = 277)

The scores for each item used to measure accreditation impact were similar (*Mean* = 3.79 to 4.03, *SD* = 0.75 to 0.87). Cronbach's *alpha,* if each item was deleted, ranged from 0.934 to 0.939 The overall score for accreditation impact was above the mid-point at almost 4 (*Mean* = 3.92, *SD* = 0.674) implying that, on average, most of the respondents agreed with the items.

Table 5.12: Measurement of Perceptions of Accreditation Impact

Item	*Mean*	*SD*	Cronbach's alpha if item deleted
01. During the preparation for the last survey, important changes were implemented in the ED.	3.81	0.75	0.93
02. You participated in the implementation of these changes.	3.86	0.79	0.93
03. You learned of the recommendations made to your ED since the last survey (if it's the case).	3.79	0.80	0.93
04. These recommendations were an opportunity to implement important changes at the ED.	3.92	0.75	0.93
05. You participated in the changes that resulted from accreditation recommendations.	3.90	0.78	0.93
06. Accreditation enables the improvement of patient care.	3.94	0.87	0.93
07. Accreditation enables the motivation of ED staff and encourages teamwork and collaboration.	3.98	0.83	0.93
08. Accreditation enables the development of values shared by all professionals at the ED.	3.94	0.80	0.93
09. Accreditation enables the ED to better respond to the population's needs.	3.96	0.77	0.93
10. Accreditation is a valuable tool for the ED to implement changes.	4.03	0.81	0.93
11. The ED's participation in accreditation enables it to be more responsive when changes are to be implemented.	3.99	0.86	0.93

5.13 Correlations between Variables

Table 5.13 presents a matrix of Pearson's correlation coefficients between the seven quality variables, ranging from r (277) = 0.580 to r (277) = 0.700. All of the quality variables were significantly ($p < .001$) positively correlated with each other, implying that they were strongly multicollinear. Consequently, the structural equation modeling did not assume that the process variables were independent but assumed that these variables were dependent on each other.

Table 5.13: Matrix of Pearson's r Correlation Coefficients

	LS	SQP	HRU	QM	CPS	ACI	QR
LS	1						
SQP	.700*	1					
HRU	.626*	.683*	1				
QM	.642*	.693*	.614*	1			
CPS	.630*	.735*	.645*	.710*	1		
ACI	.564*	.661*	.517*	.611*	.597*	1	.580*
QR	.585*	.622*	.594*	.630*	.628*	.580*	1

Note: * Significant correlation ($p < .001$). LS = Leadership; CPS = Customer (Patient) Satisfaction; QM = Quality Management; HRU = Human Resource Utilisation; ACI = Accreditation Impact; SQP = Strategic Quality Planning; QR = Quality Results.

5.14 PLS-SEM

Figure 5.14 presents the quality criteria for each of the latent variables. Figure 5.12 presents the path model constructed using PLS-SEM.

Table 5.14: Quality Criteria for PLS-SEM

Latent Variable	AVE	Composite Reliability
LS	.640	.941
QR	.761	.927
ACI	.633	.950
QM	.725	.929
CPS	.691	.940
HRU	.680	.914
SQP	.728	.941
Process	.685	.938

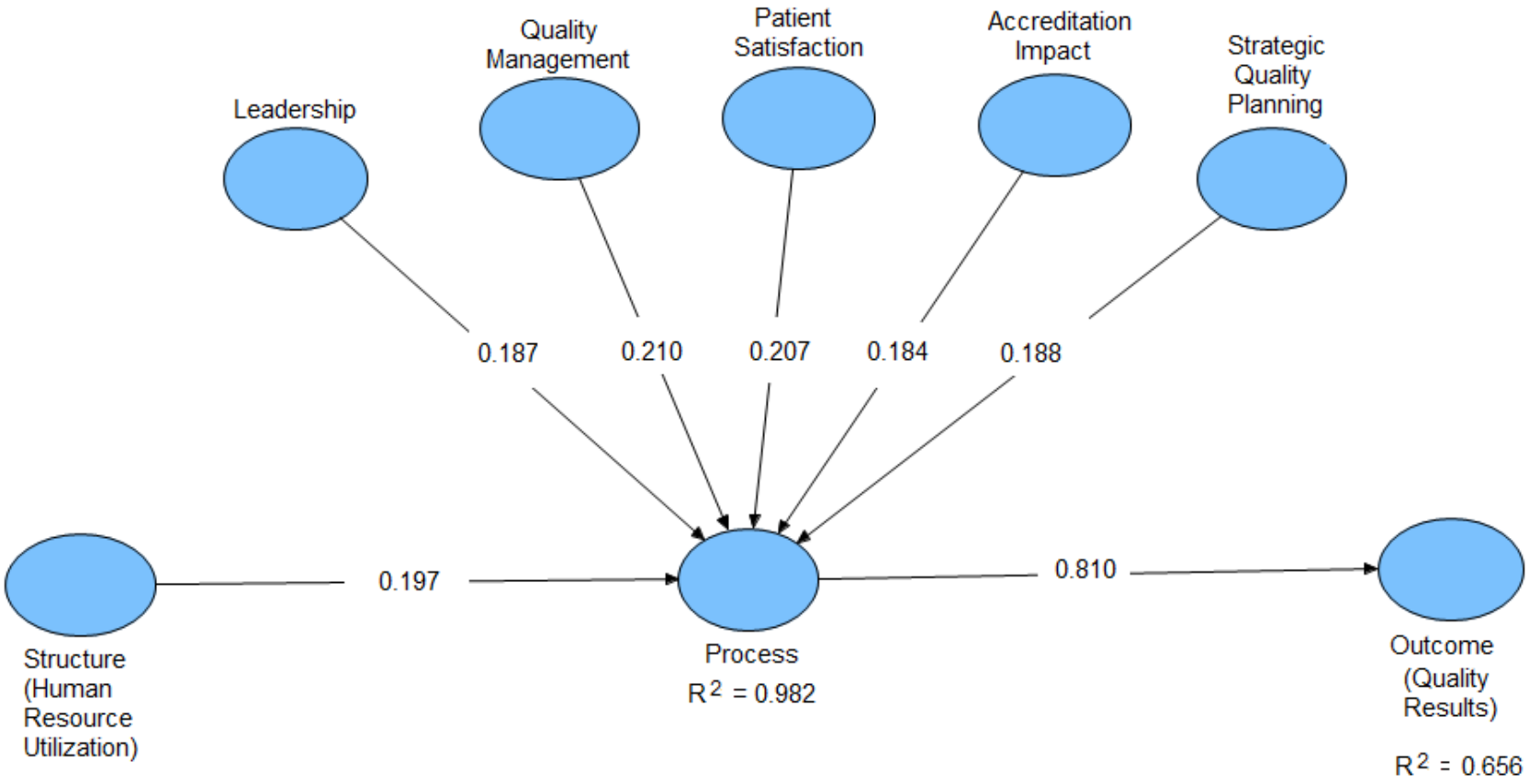

Figure 5.12: Results of PLS-SEM

The quality criteria in Table 5.14 provides the statistical evidence to validate the model in Figure 5.11 applying the thresholds defined by Hair et al. (2016). The average variance extracted by each latent variable (AVE = .63 to .76) was consistently greater than the acceptable minimum (AVE = .50). The composite reliability coefficients (.94 to .95) reflected excellent construct reliability (better than Cronbach's alpha). The path coefficients (β) are represented by the numbers on the arrows between the latent variables. Table 5.15 presents the results of the t-tests on the mean values of the β coefficients (after bootstrapping). All of the path coefficients had a positive sign and were significantly greater than zero ($p < .01$).

Table 5.15: Results of T-Tests

Path	Path coefficient (ß)	Standard Error (SE)	t-test statistic (ß/SE)	p
Structure (Human Resource→ Process)	0.197	0.018	11.021	<.001*
Leadership → Process	0.187	0.020	9.356	<.001*
Quality Management→ Process	0.210	0.020	10.625	<.001*
Patient Satisfaction → Process	0.207	0.018	11.454	<.001*
Accreditation Impact → Process	0.184	0.018	9.948	<.001*
Strategic Quality Planning → Process	0.188	0.021	9.004	<.001*
Process → Outcome (Quality Results)	0.810	0.025	33.036	<.001*

Note: * Path coefficient (ß) is significantly greater than zero ($p < .001$)

The path model explains how the quality variables were dependent on each other, complying with the Donabedian Model. Structure (Human Resource Utilisation) was positively correlated with process and process was a function of five inter-related quality variables (Leadership, Quality Management, Patient Satisfaction, Accreditation Impact, and Strategic Quality Planning). Outcome (Quality Results) was a function of process. The strongest relationship represented by the largest path coefficient ($\beta = .810$) was between process and outcome. The effect sizes (R^2) were large, reflecting the practical significance of the model. Structure and five quality variables

explained 98.2% of the variance in process and 65.6% of the variance in outcome was explained by process.

5.15 Comparison of Quality Variables Between Participants

The PLS-SEM was conducted using the combined data for all of the participants at the four hospitals. The model based on the combined data does not take into account the fact that each hospital varied with respect to the mean scores for different groups of participants. Table 5.16 presents the descriptive statistics and the results of one-way analysis of variance (ANOVA) to compare the mean scores for the seven quality variables between the four hospitals. ANOVA indicates the mean scores for these seven variables ranging from 3.11 to 4.12 were significantly different ($p < .001$) between the four hospitals. Mean scores greater than 3.75 are interpreted as positive indicators of quality whilst mean scores between 3 and 3.75 indicate that the respondents tended to neither agree nor disagree with the items.

Table 5.16: Comparison of Quality Variables Between Hospitals

Quality Variable	Hospital								ANOVA	
	H		B		U		R		F	p
	Mean	SD	Mean	SD	M	SD	Mean	SD		
Patient Satisfaction	3.46	0.81	4.12	0.36	3.64	0.59	4.11	0.61	20.53	<.001*
Human Resource Utilisation	3.23	0.83	4.06	0.45	3.60	0.65	3.87	0.69	18.93	<.001*
Quality Results	3.42	0.80	4.11	0.37	3.82	0.75	3.98	0.70	12.86	<.001*
Accreditation Impact	3.72	0.84	4.18	0.22	3.95	0.66	4.12	0.62	7.17	<.001*
Leadership	3.59	0.71	4.24	0.36	3.76	0.65	4.07	0.55	17.17	<.001*
Strategic Quality Planning	3.11	0.94	4.13	0.35	3.61	0.71	3.95	0.66	28.18	<.001*
Quality Management	3.47	0.84	4.14	0.33	3.84	0.65	4.19	0.63	18.13	<.001*

Note. * Significant difference between hospitals ($p < .001$).

The mean scores for patient satisfaction were more positive at Hospital B (4.12) and Hospital R (4.11) than at Hospital U (3.64) and Hospital H (3.46). The mean scores for Human Resource Utilisation were more positive at Hospital B (4.06) and Hospital R (3.87) that at Hospital U (3.60) and Hospital H (3.23). The mean scores for Quality Results were more positive at Hospital B (4.11) Hospital R (3.98); Hospital U (3.82) than at Hospital H (3.42). The mean scores for Accreditation Impact were more positive at Hospital B (4.18); Hospital R (4.12) and Hospital U (3.95) than Hospital H (3.72). The mean scores for Leadership were more positive at Hospital B (4.24); Hospital R (4.07); and Hospital U (3.76) and Hospital H (3.59). The mean scores for Strategic Quality Planning were less than 3.75 at all hospitals except Hospital B (4.13). The mean scores for Quality Management were more positive at Hospital B (4.14); Hospital R (4.19); and Hospital U (3.84) than at Hospital H (3.47). In general, Hospital B (with mean scores consistently > 4 for all seven variables tended to have the most positive perceptions of quality) whilst Hospital H (with mean scores consistently < 3.75 for all seven variables) tended to have the least positive perceptions about quality).

Table 5.17 presents the descriptive statistics and the results of one-way ANOVA to compare the mean scores for the seven quality variables between three occupational categories of participants The mean scores for three quality variables (Leadership, Quality Results, and Accreditation Impact) were significantly different ($p < .05$) between the three categories of staff (doctor, nurse, and head nurse or director).

Table 5.17: Comparison of Quality Variables Between Occupational Categories

Variable	Category	Mean	SD	F	p
Leadership	Physician	4.15	0.53	8.29	<.001*
	Nurse	3.85	0.61		
	Director or Head Nurse	3.63	0.98		
Strategic Quality Planning	Physician	3.83	0.69	1.10	.336
	Nurse	3.67	0.82		
	Director or Head Nurse	3.75	0.78		
Human Resource Utilisation	Physician	3.74	0.78	0.33	.720
	Nurse	3.68	0.70		
	Director or Head Nurse	3.80	0.82		
Quality Management	Physician	4.02	0.60	1.15	.320
	Nurse	3.88	0.71		
	Director or Head Nurse	3.95	0.86		
Quality Results	Physician	4.16	0.61	11.33	<.001
	Nurse	3.71	0.71		
	Director or Head Nurse	3.91	0.89		
Customer Satisfaction	Physician	3.92	0.64	0.62	.541
	Nurse	3.82	0.67		
	Director or Head Nurse	3.79	0.85		
Accreditation Impact	Physician	4.16	0.81	3.78	0.024*
	Nurse	3.90	0.85		
	Director or Head Nurse	4.31	1.01		

Note. * Significant difference between categories ($p < .05$).

The mean score for the physicians (4.15) indicated a more positive perception of Leadership than the nurses and director or head nurse. The mean score for the physicians (4.16) indicated a more positive perception of Quality Results than the nurses and director or head nurse. The mean scores for the directors and head nurses (4.31) and the physicians (4.16) indicated a more positive perception of Accreditation Impact than the nurses.

Phase 3- Quality Process Indicators

5. 16 Key Performance Indicators

The second section of Chapter 5 presents evidence to address the research sub-question 'Is accreditation associated with better performance in ED quality process indicators?'. The KPIs, based on the Canadian Emergency Triage System (CTAS), were analysed to compare the quality of the patient-centred programs in the emergency departments at four hospitals. A summary of the KPIs and benchmarks is presented in Chapter 4 (see Table 4.5).

5.17 Length of Stay

Table 5.18 displays the cross-tabulation of the CTAS levels vs. compliance with the benchmark for the Length of Stay. Figures 5.13 to 5.17 display time-series plots of the KPI indicator Length of Stay (h) for the five CTAS triage levels.

Table 5.18: CTAS Level vs. Compliance with Length of Stay Benchmark (N=12)

CTAS Triage Level	Frequencies of Compliance with Benchmarks			
	Hospital H (1)	Hospital B (2)	Hospital U (3)	Hospital R (4)
1	12	12	12	12
2	12	12	12	12
3	12	12	12	12
4	12	11	12	12
5	12	12	12	12

Note: Level 1: Resuscitation – Conditions that are threats to life or limb. Level 2: Emergent – Conditions that are a potential threat to life, limb or function. Level 3: Urgent – Serious conditions that require emergency intervention); Level 4: Less Urgent; Level 5: Non-Urgent.

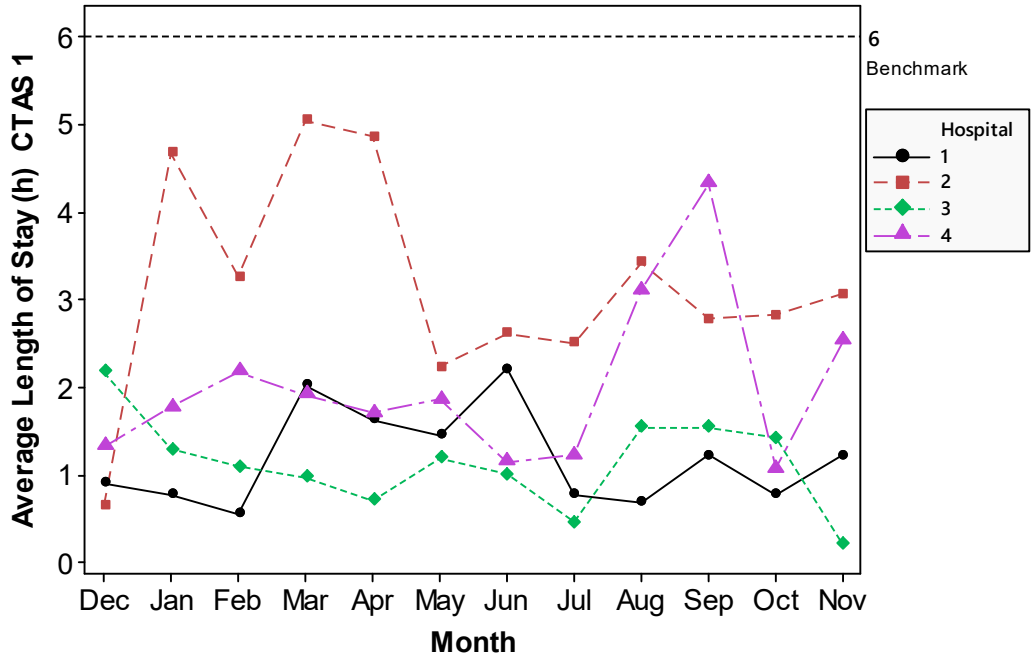

Figure 5.13: Time Series of Average Length of Stay (CTAS 1)

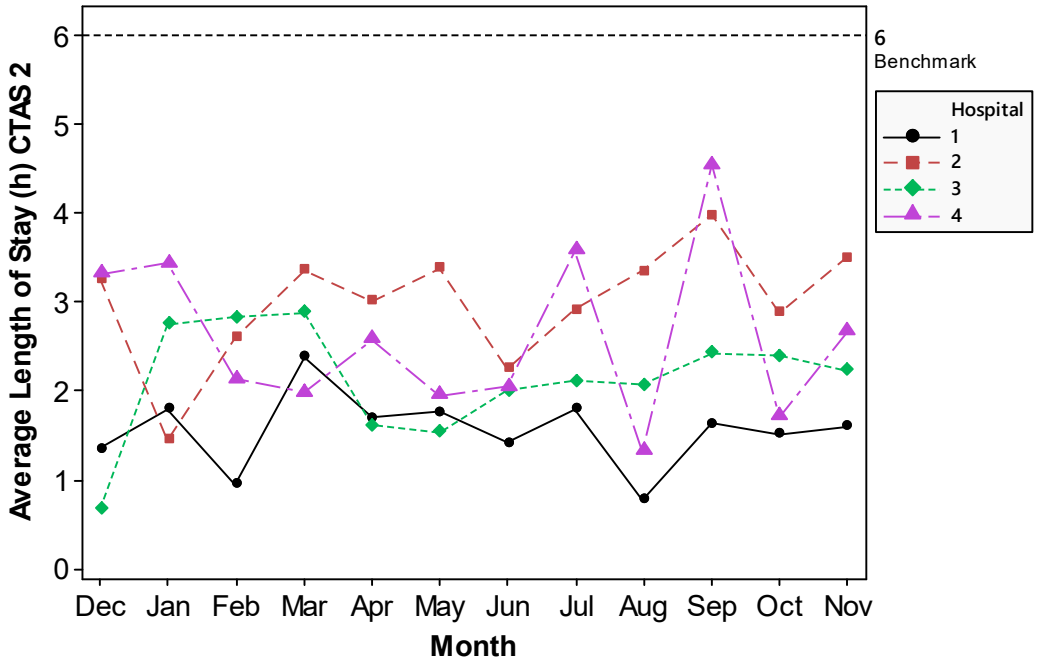

Figure 5.14: Time Series of Average Length of Stay (CTAS 2)

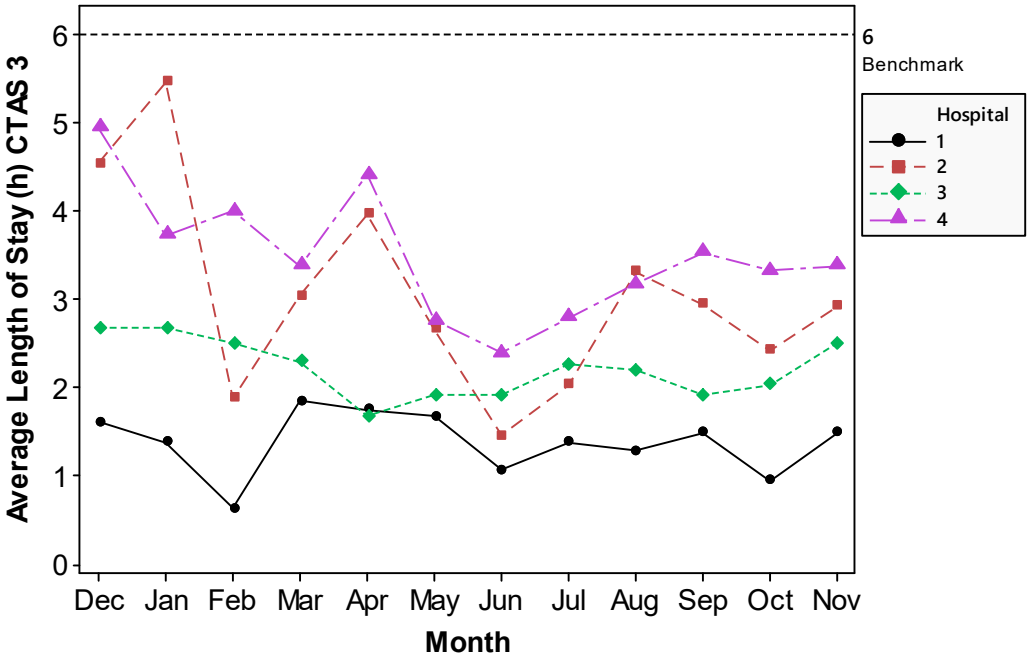

Figure 5.15: Time Series of Average Length of Stay (CTAS 3)

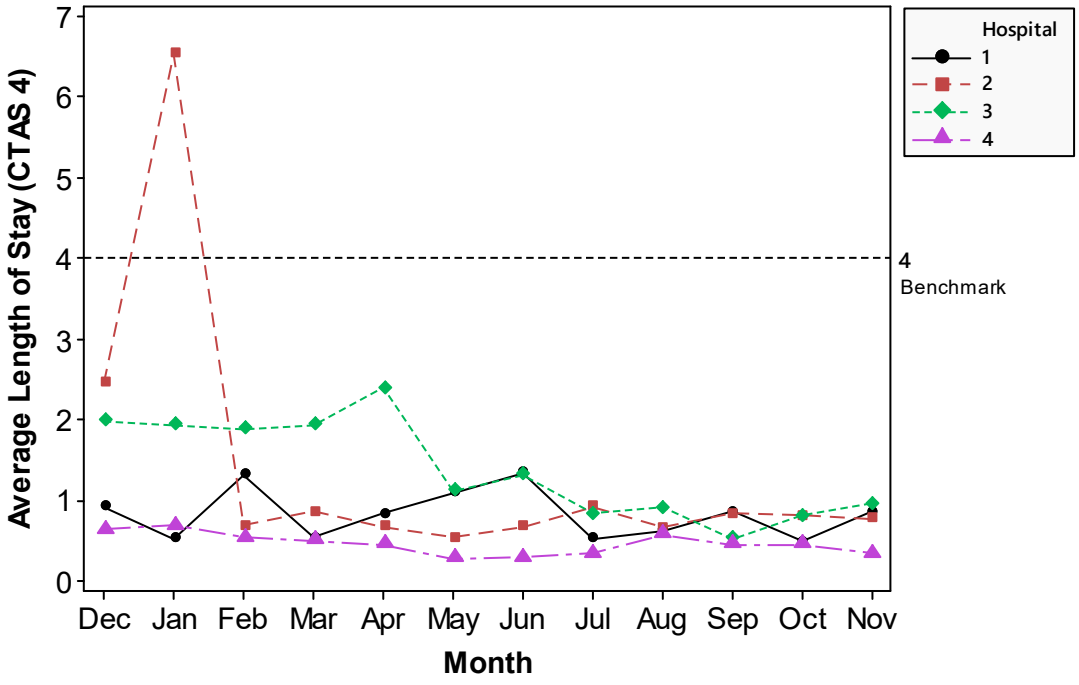

Figure 5.16: Time Series of Average Length of Stay (CTAS 4)

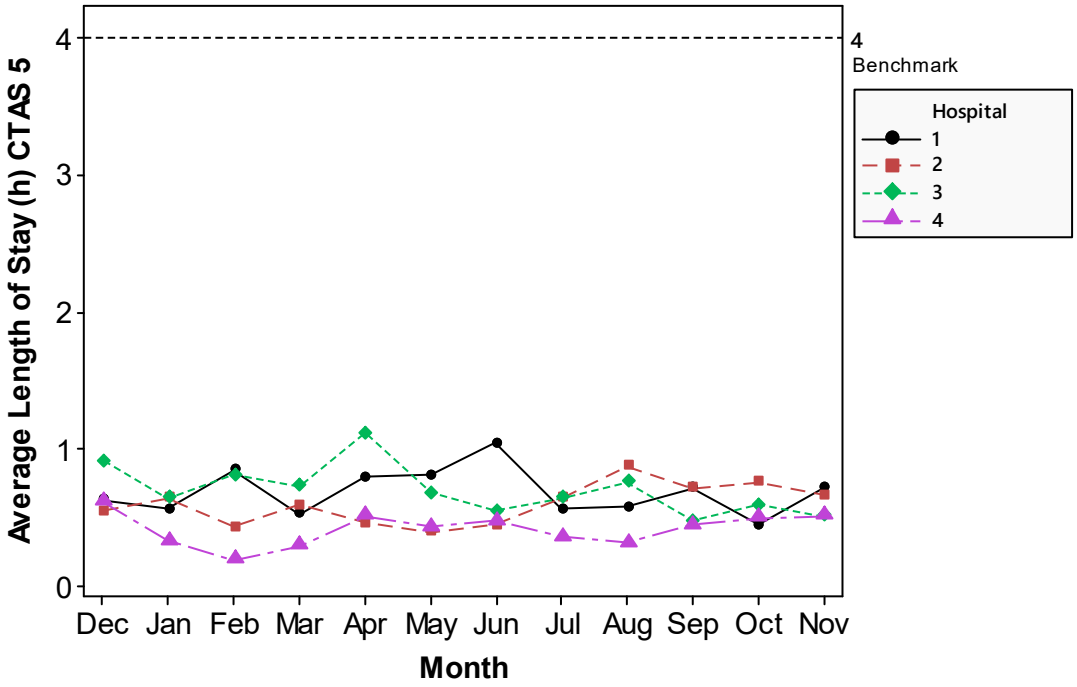

Figure 5.17: Time Series of Average Length of Stay (CTAS 5)

The four hospitals consistently complied with the Length of Stay benchmark, with the exception of Hospital B (2) which did not comply with the benchmark for CTAS 4 in one month. Pearsons's chi-square test indicated that Length of Stay was not significantly dependent on the hospital (χ^2 = .052, p = 1.000) with a negligible effect size (Cramer's V = .008).

5.18 Waiting Time from Registration to Physician

Table 5.19 displays the cross-tabulation of the CTAS levels vs. compliance with benchmarks for the Waiting Time from Registration to Physician KPI (0.083 h). Figures 5.18 to 5.22 display the time-series plots of the KPI indicator Waiting Time from Registration to Physician (h) for the five CTAS triage levels.

Table 5.19: CTAS Level vs. Compliance with Waiting Time from Registration to Physician Benchmark

CTAS Level	Frequencies of Compliance with Benchmarks			
	Hospital H (1)	Hospital B (2)	Hospital U (3)	Hospital 4 (R)
1	7	4	11	6
2	10	12	10	12
3	6	10	7	9
4	12	12	12	12
5	12	12	12	12

Note: Level 1: Resuscitation – Conditions that are threats to life or limb. Level 2: Emergent – Conditions that are a potential threat to life, limb or function. Level 3: Urgent – Serious conditions that require emergency intervention); Level 4: Less Urgent; Level 5: Non-Urgent.

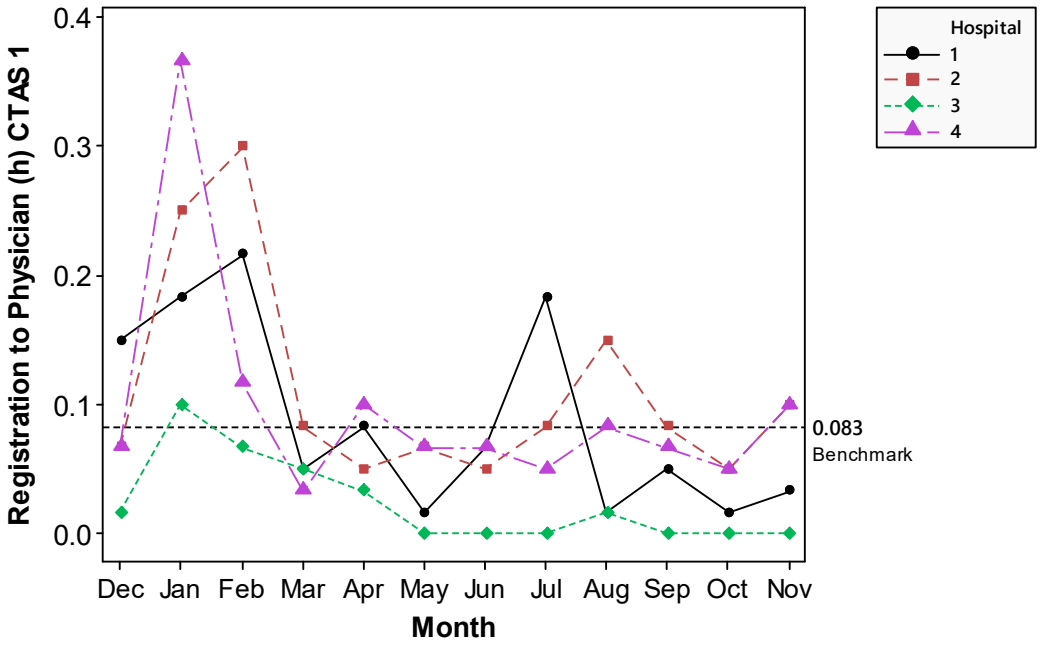

Figure 5.18: Time Series of Waiting Time from Registration to Physician (CTAS 1)

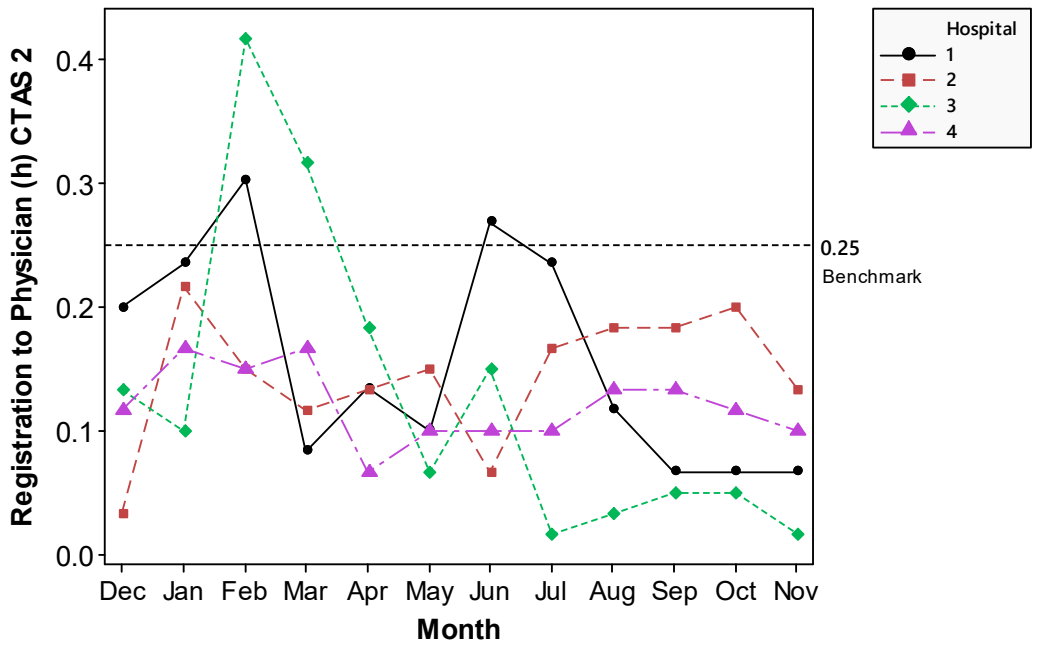

Figure 5.19: Time Series of Waiting Time from Registration to Physician (CTAS 2)

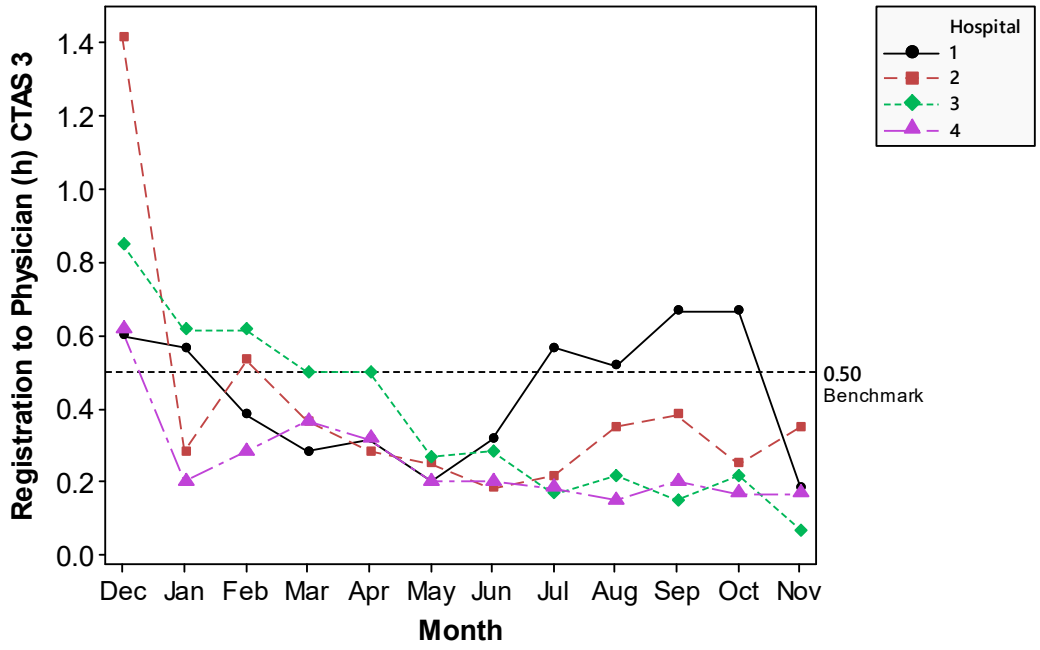

Figure 5.20: Time Series of Waiting Time from Registration to Physician (CTAS 3)

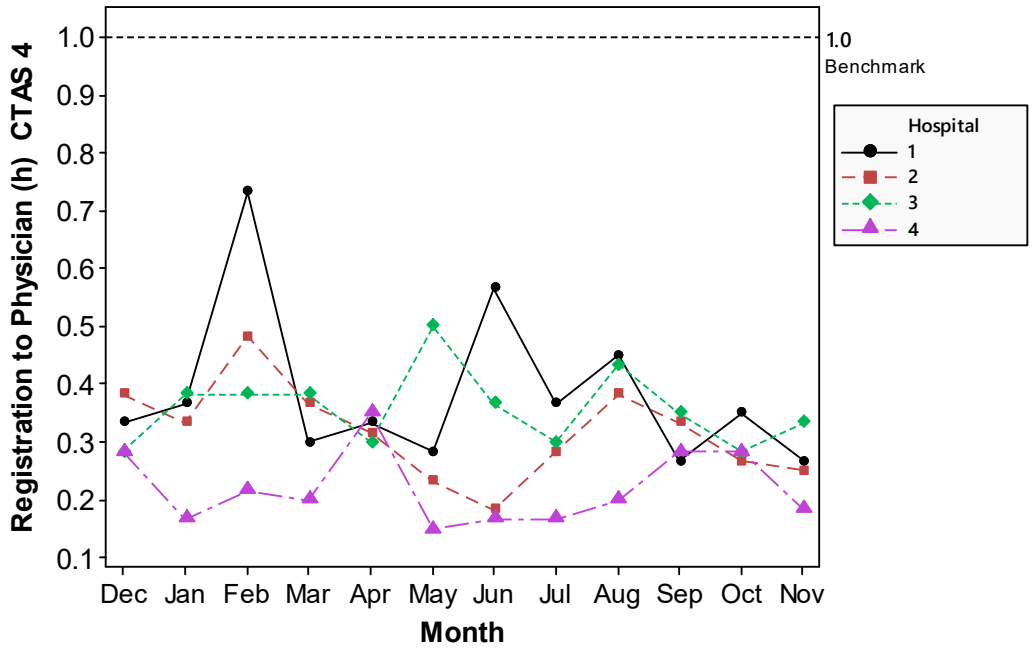

Figure 5.21: Time Series of Waiting Time from Registration to Physician (CTAS 4)

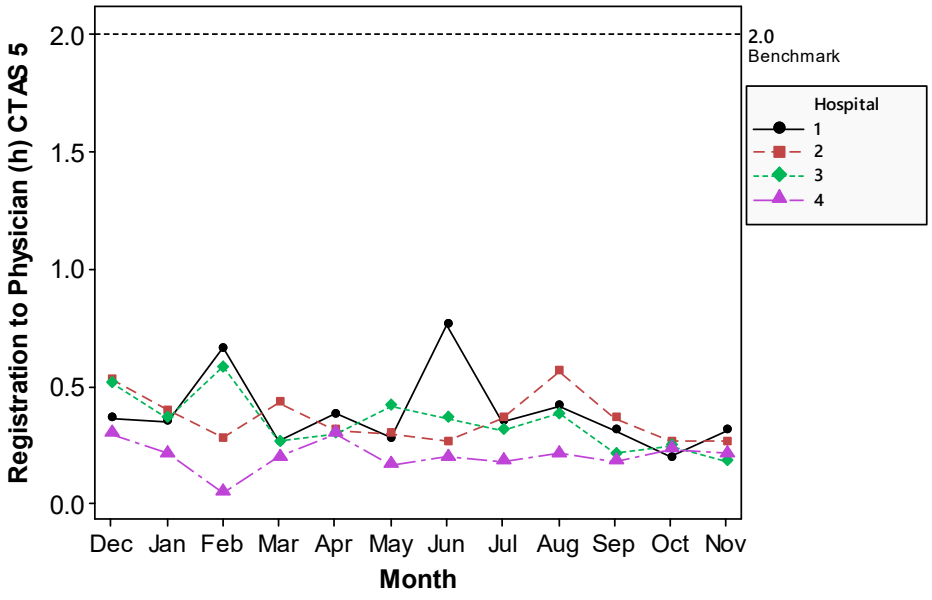

Figure 5.22: Time Series of Waiting Time from Registration to Physician (CTAS 5)

The four hospitals did not consistently comply with the benchmark for CTAS levels 1, 2, and 3, although they did comply for the full 12 months for CTAS levels 4 and 5. Pearsons's chi-square test indicated that the Waiting Time from Registration to Physician KPI was not significantly dependent on the hospital ($\chi^2 = 4.96$, $p = .959$) with a negligible effect size (Cramer's $V = .089$).

5.19 Waiting Time from Decision to Admit to ICU to Arrival in ICU and Waiting Time from Decision to Admit to Ward to Arrival in Ward

Table 5.20 displays the cross-tabulation of the KPI indicators vs. compliance with the benchmarks for Waiting Time from Decision to Admit to ICU to Arrival in ICU (Decision to ICU) and Waiting Time from Decision to Admit to Ward to Arrival in Ward (Decision to Ward) at the four hospitals. Figures 5.23 and 5.24 display the time-series plots of the KPI indicators Decision to ICU and Decision to Ward.

Table 5.20: Compliance with Waiting Time from Decision to Arrival in ICU and Waiting Time from Decision to Arrival in Ward Benchmarks

KPI Indicator	Hospital H (1)	Hospital B (2)	Hospital U (3)	Hospital R (4)
Decision to ICU (h)	9	0	7	2
Decision to Ward (h)	12	1	12	1

The four hospitals consistently did not comply with the Waiting Time from Decision to Arrival in ICU benchmark (4.0 h). Only Hospitals 2 (B) and 4 (R) complied with the Waiting Time from Decision to Arrival in Ward benchmark (4.0 h) in one month. Pearson's chi-square test indicated that the KPI indicators were not significantly dependent on the hospital ($\chi^2 = 2.167$, $p = .539$) with a small effect size (Cramer's $V = .194$).

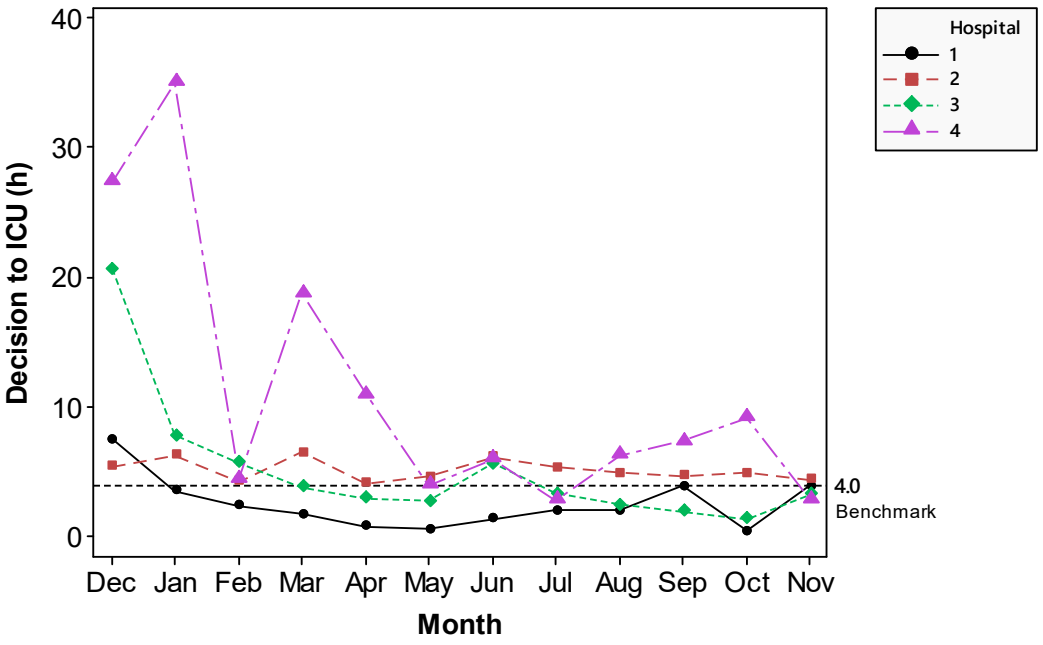

Figure 5.23: Time Series of Waiting Time from Decision to Arrival in ICU

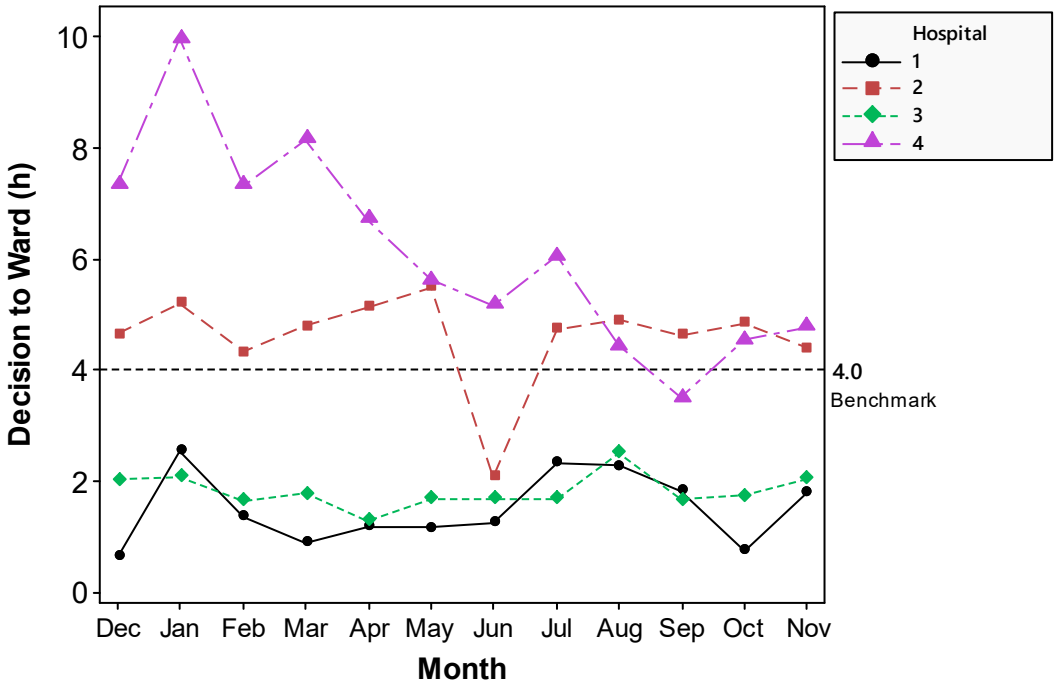

Figure 5.24: Time Series of Waiting Time from Decision to Arrival in Ward

5.20 Conclusion

This chapter presented the research results that emerged from the two quantitative phases. The first part of this chapter provided the results of phase 1 which included a survey of quality of care and accreditation. In this part, the demographic characteristics of the respondents were reported, which suggested that the demographics between the sites were similar, with the exception of Hospital H which had a larger proportion of Saudi respondents and a larger proportion of males which is consistent with having more Saudi staff. Then, the analyses of the responses to the main research question and sub-question were presented, illustrating the relationship between ED structure, as measured by human resources utilisation, and the five process measures and the perceptions of quality of care outcomes. This was followed by the results for the comparison of quality variables between participants. In part two, the results of phase 3, the statistical analysis of the four ED quality process indicators, were reported. These four quality process indicators are length of stay, waiting time, waiting time from decision to arrival in ICU and waiting time from decision to arrival in ward. Generally, other than length of stay, the four hospitals did not consistently meet the identified benchmarks for the quality process indicators. The results obtained from the two phases reveal significant information which identifies the relationship between the quality variables structure, process and outcome on ED quality of care in Saudi Arabia. The following chapter discusses phase 2 and gives details of the understanding of patient perceptions of their experience of the quality of care in the ED.

Chapter 6: Qualitative Findings - (Phase 2 - Patients' Interviews)

6.1 Summary of Thematic Analysis

The purpose of the interviews was to provide insights into the lived experiences of individuals and the meaning that these individuals gave to their experiences, uncontaminated by the opinions of the interviewer or anyone else (Merriam & Tisdell, 2015). In this chapter, therefore, the verbatim quotations of the 11 patients interviewed at the four hospitals are tabulated without editing. The researcher was aware that his own opinions could potentially play a role in generating biased findings (Akkerman, Admiraal, Brekelmans, & Oost, 2008; Day, 2012; Finlay & Gough, 2008) so he exercised reflexivity. Confirmation bias (i.e., the tendency of many qualitative researchers to selectively report only a few quotations in order to confirm their own beliefs (Oswald & Grosjean, 2004)) was eliminated. The researcher employed bracketing, meaning that he took a neutral stance (Fischer, 2009). The researcher did not exclude quotations that contradicted his opinions nor did he emphasise quotations that confirmed or strengthened his opinions. Bracketing ensured that only the lived experiences of individual participants are described in Chapter 6 and not the prejudiced opinions of the researcher or any other person. Bracketing implies that the implications of the thematic analysis are not interpreted in Chapter 6. The researcher's interpretations of the patients' interviews and their implications in the context of the quality of EDs with respect to the Donabedian model are considered in Chapters 7 and 8.

Table 6.1 presents a summary of the thematic analysis by presenting the frequency distributions (counts and percentages) of the multiple manifestations of the secondary themes classified within each of the five primary themes listed in the a priori template. These data are provided here for reference and will be referred to in subsequent sections of the results.

Table 6.1: Frequencies of Themes

Primary Theme	Secondary Theme	Manifestation	Count	% (within secondary theme)
1. Context	1.1 Reasons for Visit	Stomach pain	3	27.3
		Stroke	2	18.2
		Chest pain	1	9.1
		Heart problem	1	9.1
		Kidney stone	1	9.1
		Diabetes	1	9.1
		Cancer	1	9.1
		Hypertension, Diabetes, & Alzheimer's	1	9.1
	1.2 Number of visits	Once a year	1	9.1
		Twice a year	5	45.5
		Three times a year	2	18.2
		Five times a year	1	9.1
		More than five times a year	1	9.1
2. Quality of care	2.1 Indicators of good quality of care	Good communication	9	27.3
		Short waiting time	8	24.2
		Language	7	21.2
		Good staff	5	15.2
		Triage	3	9.1
		Good facilities	1	3.0
	2.2 Indicators of poor quality of care	Long waiting time	10	45.5
		Poor communication	3	13.6
		Poor staff	5	22.7
		Poor facilities	2	9.1
		Poor treatment	2	9.1
3.Satisfaction	3.1 Level of satisfaction	Very satisfied	4	30.8
		Satisfied	3	23.1
		Moderate	1	7.7
		Neutral	1	7.7
		Acceptable	1	7.7
		Not satisfied	1	7.7
		Overall quality of care	1	7.7
		Waiting time	1	7.7
4. Messages for ED leaders	4.1 Recommendations	Training	6	28.6
		Staff	6	28.6
		Facilities	3	14.3
		Emotional care	3	14.3
		Triage	2	9.5
		Communication	1	4.8
	4.2 Commendations	Gratitude and Respect	8	100.0

6.2 Primary Theme 1: Context

Table 6.2 (see Appendix H) shows that the most frequent reasons for visiting the ED were stomach pain and stroke, followed by a range of other chronic complaints. The thematic analysis revealed that most of the patients visited the ED to receive treatment for chronic illnesses, reflected by statements such as "*This happened to me before, so I am aware of it.";" I have had a stomach ache for a long time and it is severe."; "About a month ago, she had the exact same symptoms"; "I came because I am a cancer (Lymphoma) patient";* and *"Three years ago, he was diagnosed with Alzheimer's".* Although four of the cases appeared to require urgent medical attention (e.g., stroke, chest pain, heart problem, and kidney stone) the majority were chronic cases (e.g., stomach ache, diabetes, blood pressure, Alzheimer's disease) which may not have required urgent attention.

Table 6.3 summarises Primary Theme 1: Context, including the units of information extracted from the interview transcript to identify five manifestations of Sub-theme 1.2: Number of Visits.

Table 6.3: Primary Theme 1: Context; Sub-theme 1.2: Number of Visits

Patient		Manifestation	Unit of information
BM2	1	Once a year	*"This is my very first visit to the ED".*
HM1	2	Once or twice a year	*"Once or twice a year".*
BM1	2	Twice a year	*"About twice a year for the same problem."*
RF1	2	Twice a year	*"This is the second time"*
RM1	2	Twice a year	*"We came two months ago, and he was admitted."*
UM1	2	Twice a year	*"This is the second time."*
HF1	3	Three times a year	*"About three times a year for me and my family."*
HM2	3	Three times a year	*"Perhaps three times a year for me or for someone in the family".*
BM3	4	Five times a year	*"This year I have come about five times because of the kidney stone issue that I have."*
UF1	5	More than five times a year	*"We come based on appointment schedule. Perhaps 4-5 times a month."*

Only one patient with an acute condition reported that this was his first visit. Most of the patients had more than one experience in an ED. Five patients reported that they had made up to two visits per year. Four patients reported that they had visited the ED on multiple occasions, ranging from three to more than five times per year.

6.3 Primary Theme 2: Quality of Care

Table 6.4 (see Appendix I) summarised Primary Theme 2: Quality of Care, including the quotes extracted from the interview transcript to identify six manifestations of Sub-theme 2.1 Indicators of Good Quality of Care. The most frequent responses indicating good quality of care referred to good communication, a short waiting time, language, good staff and triage.

The most frequent manifestation of the sub-theme "Good quality of care" was identified as "Good communication", reported by nine respondents. Good communication manifested itself in various ways, including *"They kept me informed of all assessments and the results of tests"; "The physician came to me and told about the assessment and my condition"; "They listened to me and listened to my medical complains"; "She respects her patients and informs them of all the medical procedures and their rights"; "She answered our questions and informed us about what was there".*

The next most frequent manifestation of the sub-theme was identified as "Short waiting time" identified by eight patients who used the following phrases: "*immediate medical intervention"; "immediate attendance to the case"; "I was attended to in 10 minutes which is good."; "I think all was punctual, responses, attendance, and everything" and "There was no long waiting time to mention." "*Language*"* was identified as a sub-theme reflecting good quality of care because seven patients talked about it as follows: "*The doctor was an Arab, so he spoke Arabic to me"; "They*

get help from other doctors or nurses if they need help with language"; "Health professionals were all Arabs and the language was clear"; "The Saudis communicated with us in our everyday language"; and *"Everything was clear, and when they needed to say something in English they waited until a translator came".*

"Good staff" was a sub-theme identified by five patients who expressed the following: *"The care that was provided by the doctors and nurses was very good"; "The health professional staff are good"; "Everyone was excellent at the ED" and "The care by the nurses was good" and "They really did a great job".* Two patients contributed to the sub-theme *"Triage",* stating that it was *"good"*. One patient commented that *"Good privacy: the curtains and equipment"* providing evidence for the sub-theme "Good facilities".

Table 6.5 (see Appendix J) summarises Primary Theme 2: Quality of Care, including the units of information extracted from the interview transcripts to identify six manifestations of Sub-theme 2.2 Indicators of Poor Quality of Care. The most frequent responses indicating poor quality of care referred to long waiting time, poor staff, and poor communication.

The most frequent manifestation of the sub-theme "Poor quality of care" was identified as "long waiting time", reported in ten units of information perceived by five patients. Long waiting time manifested itself in various ways, including *" I came at 11 am and I was admitted at 2 am after midnight"; "I came to the ED at 6 am and I was not aware of my condition until the afternoon"; "The doctor was a little late"; "On weekends and during night work hours or what we call off*

work hours, the waiting time is usually high.";" About three hours. Bit long waiting" and *"I think it was long time".*

The next most frequent manifestation of the sub-theme "Poor Quality of Care" was identified as "Poor staff" identified by five patients, exemplified by statements such as *"Some Saudi nurses are not as good as the other non-Saudi nurses"; "The Egyptian doctor on duty at that time was dealing with patient care negatively, he had a negative attitude"; "There is not enough human power as yet".*

*"*Poor Communication*"* was identified as a sub-theme reflecting poor quality of care because three patients made the following statements: *"They did not inform me of my assessment results"; "You do not feel comfortable enough to ask questions"; and "The communication was not good as I expected".* "Poor Facilities" was a sub-theme identified by two patients who complained that *"There is no place for the patients' company to sit";* and *"The environment was not pleasing to our patient in that room...The place was not ready."* Two patients contributed to the sub-theme *"*Poor treatment*",* providing the following evidence: *"Two doctors came and chatted in English and decided to insert a nasogastric tube, but we refused"* and *"They took me with the IV-line attached to my hand to have a CT...I hit my hand, and I bled and the whole scene was not pleasant".*

6.4 Primary Theme 3: Satisfaction

Table 6.6 summarises Primary Theme 3: Level of Satisfaction with the quality of care, including the quotes extracted from the interview transcript to identify six manifestations of Sub-theme 3.1: Satisfaction Level. Based upon the interpretation of individual units of information, four of the

patients were classified as very satisfied, three were classified as satisfied. The satisfaction of three patients was classified as either moderate, acceptable, or neutral. Only one patient complained that he was not satisfied.

Table 6.6: Primary Theme 3: Satisfaction; Sub-theme 3.1: Satisfaction Level

Patient	Manifestation		Unit of information
UM1	1	Very satisfied	*"Excellent quality of care".*
BM2	1	Very satisfied	*"I heard that the ED usually is busy and has lots of patients, but I came today, and I was well received and taken care of".*
HF1	1	Very satisfied	*"I am very satisfied".*
HM3	1	Very satisfied	*"I am very satisfied with the services".*
HM1	2	Satisfied	*"I was satisfied for the services provided to me. On a scale from one to ten? I'd say 7."*
HM2	2	Satisfied	*"The level of satisfaction from good to very good. I am satisfied but not very satisfied. On a scale from one to ten, it's seven".*
UF1	2	Satisfied	*"It is great. I am satisfied".*
BM1	3	Moderate	*"It was in the middle (moderate)."*
RF1	4	Acceptable	*"It was acceptable quality of care in this hospital ED."*
RM1	5	Neutral	*"I am not totally satisfied, neutral satisfaction".*
BM3	6	Not satisfied	*"Not satisfied."*

Table 6.7 presents a cross-tabulation of the frequencies of the six satisfaction levels reported by the 11 patients in the four hospitals. The views expressed by the patients at Hospital B were the most variable, ranging from very satisfied, moderately satisfied to not satisfied. The views of the patients at Hospital H and U were more consistent, reporting that they were very satisfied or satisfied. The patients at Hospital R reported acceptable or neutral satisfaction.

Table 6.7: Comparison of Satisfaction Levels between Four Hospitals

Satisfaction level	Hospital				Total
	B	H	R	U	
Very satisfied	1	2	0	1	4
Satisfied	0	2	0	1	3
Moderate	1	0	0	0	1
Acceptable	0	0	1	0	1
Neutral	0	0	1	0	1
Not satisfied	1	0	0	0	1

Table 6.8 presents a cross-tabulation of the frequencies of the six indicators of good quality of care reported by the 11 patients for each of the four hospitals. The most frequent indicators were good communication and short waiting time. The views of the patients at Hospital H and R were the most variable, reporting five indicators, namely good communication, short waiting time, language, good staff, triage, and good facilities. The patients at Hospital B reported four indicators, namely good communication, short waiting time, language, and triage. The patients at Hospital U reported four indicators, namely good communication, short waiting time, good staff, and language.

Table 6.8: Comparison of Good Quality of Care Between Four Hospitals

Indicator of good quality of care	Hospital code				Total
	B	H	R	U	
Good communication	2	4	1	2	9
Short waiting time	2	3	1	2	8
Language	1	3	2	1	7
Good staff	0	3	1	1	4
Triage	1	2	0	0	3
Good facilities	0	0	1	0	1

Table 6.9 presents a cross-tabulation of the frequencies of the five indicators of poor quality of care reported by the 11 patients in. the four hospitals. The most frequent indicator was the long waiting time. The views of the patients at Hospital R were the most variable, and all five indicators were reported, namely long waiting time, poor staff, poor communication, poor facilities, and poor treatment. The patients at Hospital U reported only two indicators, specifically poor staff and poor treatment. The patients at Hospitals B and H reported the same three indicators, namely long waiting time, poor staff, and poor communication.

Table 6.9: Comparison of Poor Quality of Care Between Four Hospitals

Indicators of poor quality of care	Hospital code				Total
	B	H	R	U	
Long waiting time	5	3	2	0	10
Poor staff	1	1	1	1	5
Poor communication	1	1	1	0	3
Poor facilities	0	0	2	0	2
Poor treatment	0	0	1	1	2

6.5 Primary Theme 4: Messages for ED Leaders

Table 6.10 summarizes Primary Theme 4: Messages for ED leaders, including the quotes extracted from the interview transcript to identify six manifestations of Sub-theme 4.1 Recommendations. The most frequent manifestations concerned the need for more staff training, enhancing the quality and attitudes of the staff, improving the facilities, such as the patient's seating area, as well as the need to improve emotional care and prioritizing cases through triage.

Table 6.10: Primary Theme 4: Messages for ED Leaders; Sub-theme 4.1 Recommendation

Patient	Manifestation		Unit of information
BM3	1	Training	*"They have to improve and get more training because I was really ill, but you discharged me from the hospital without any clinical assessment. This is an absolute failure."*
HF1	1	Training	*"I want to encourage them to go through more training and care because their position is very sensitive, and they must stay updated with all recent diseases and information".*
RF1	1	Training	*"You should provide training for the ED staff to show them how to deal with patients and their families with a positive attitude."*
HM2	1	Training	*"New health professionals may sometimes lack experience so they need extra training on how to deal with patients especially those in pain. They must improve their skills".*
UM1	1	Training	*"Maybe some of the young Saudi staff require some extra training because I think there are still some cultural and social barriers when it comes to Saudi female health*

			professionals. The work in emergency is critical and skilful people are needed and leaders should keep their eyes on the health professionals and improve their skill with training... They should improve themselves with continuous medical education to cope with new medical and technological changes."
HM1	1	Training	*"ED staff should always be updated with training, and I encourage them to always be updated especially in regard to dealing with urgent cases like CPR and other ED practices and medicines."*
BM3	2	Staff	*"I think that the ED succeeds or fails on an individual basis not on an organizational level. Individual behaviour is the problem. Nurses attend cases as if they were non-urgent, but doctors take them to intensive care. The delay is because of the actions of the nurse."*
HM2	2	Staff	*"The number of nurses and doctors must increase because there are only a few and this is the reason the ED is under pressure and why there is long waiting time. The current limited numbers cannot provide and cover such number of patients. This an obstacle."*
HM3	2	Staff	*"If the Saudi personnel follow the steps of the others, King Khalid Hospital would be the best".*
HM3	2	Staff	*"Attitude is important. A doctor is a doctor when he or she is humane. I believe in God and don't worry about death, but sometime patients come with chronic psychological and physiological conditions and when they meet arrogant doctors this can be seriously bad".*
RF1	2	Staff	*"The doctor's attitude. I think his attitude was negative, no for sure negative. To the doctor, I say think about your conscience in the same way as you think of your responsibility."*
BM1	2	Staff	*"They should always encourage the nurses to communicate well with patients because patients sometimes are treated badly when the ED is under pressure."*
HF1	3	Facilities	*"There should have been a room designated for urgent cases."*
RF1	3	Facilities	*"The patient's company area (seating). We were standing the entire time. The administration must think about it".*
RM1	3	Facilities	*"This place is so critical and sensitive; it must be perfectly ready to receive patients. The observation room should not be used to store stuff. It has to be comfortable for patients."*
BM1	4	Emotional care	*"They should be kind and gentle even with injections, they should not do them quickly."*
BM3	4	Emotional care	*"If a patient receives emotional care that would be enough to make them very satisfied. There must be care which is not merely medical but also emotional."*

HM2	4	Emotional care	*"You have to be patient and accommodate the patient's mood and pain due to the humanitarian job you're doing."*
HF1	5	Triage	*"I wish there could be a change in the way cases are prioritized in triage according to urgency like burns or injuries because they should not have to wait as they require immediate assistance".*
HM1	5	Triage	*"EDs in general receive patients with non-urgent conditions. Such cases must be transferred to primary health centres and not to the ED. I think there is a MOH regulation that states every single case must be accepted by the ED and can't be rejected at all."*
HM1	5	Tirage	*"I really wish that the leaders of the ED along with the quality department come up with a policy to deal with this situation. Sometimes non-urgent cases are dealt with along with critical cases at the same time and this is a huge mistake. This could lead to a critical situation. Priority must be given to urgent cases".*
HM3	6	Communication	*"I think patients should be interviewed on TV, so health professionals listen to our voice".*

Table 6.11 summarises Primary Theme 4: Messages for ED leaders, including the units of information extracted from the interview transcript to identify two manifestations of Sub-theme 5.2: Commendations. This sub-theme included seven units of information expressing gratitude and respect.

Table 6.11: Primary Theme 4: Messages for ED Leaders; Sub-theme 4.2: Commendations

Patient	Manifestation		Unit of information
HF1	1	Gratitude	*"Their quick response and consideration once they had assessed my condition and how urgent it is, so after they diagnosed my condition, they paid a different level of attention and I thank them for that."*
HM3	1	Gratitude	*"I can't express my gratitude to Dr. X. Also, the nurses who attended my case that day were not related to me, but they treated me like family. They are good people. Thank you very much".*
BM1	1	Gratitude	*"God bless you"*
BM3	1	Gratitude	*"To those who admitted me I am so thankful."*
HM2	1	Gratitude	*"I love to express my gratitude to a good person even if what they do is their duty in the first place."*
HM1	1	Gratitude	*"I thank them very much for their valuable efforts."*
UF1	1	Gratitude	*"I'd like to say thank you but it is not enough.... Keep going with this type of good services."*
UM1	2	Respect	*"I really want to pay them the highest respect".*

6.6 Conclusion

The results described in this phase of the research highlight important findings on how the ED patients perceived the lived experiences in the ED. This chapter detailed the findings in relation to four key themes and associated sub-themes which emerged from the data and highlights the opinions of the patients in the ED. Thematic analysis was conducted according to the four themes of context, quality of care, satisfaction and messages to ED leaders. Themes were explained and participants' direct quotes were presented under each theme. The rich data obtained from this phase reveal how the patients perceive the quality of care provided in the EDs in accredited public hospitals in Saudi Arabia. Further examination and discussion of the findings will explore the interpretation of the themes identified in this chapter in the context of the recent literature. The results of the quantitative phase in chapter five as well as the qualitative phase in this chapter are integrated together in chapter seven to discuss the results of the findings of this study.

Chapter 7: Integrative Discussion

7.1 Introduction

This mixed methods study focuses on the concept of quality of care and the standards of accreditation in emergency departments (EDs) in public hospitals in Saudi Arabia. The theoretical framework was underpinned by the Donabedian model (Donabedian, 1988, 2002) positing that factors associated with structure, process, and outcome should be evaluated in order to determine the quality of a health care system. Accordingly, the overarching question addressed by this study is '*What is the relationship between the structure, processes and patient outcomes in emergency departments in accredited public hospitals in Saudi Arabia*? The structure refers to human resources utilisation, the processes refer to what was actually done in practice by the EDs to provide care and is measured by the perceptions of the ED health professionals and the outcomes refers to the ultimate results of health care practices and interventions measured as quality results.

No previous attempts have been made to determine if there is a post-accreditation improvement in the quality of care in EDs in public hospitals in Saudi Arabia. Previous studies have not focused specifically on quality of care in EDs. The continuity or performance of health care delivery after the accreditation of EDs has not been effectively monitored. This gap in knowledge and practice provides the direction and rationale for the current study.

Empirical data were collected at four accredited public hospitals in three provinces (Hail, Qassim and Riyadh) in the three phases. Chapter 5 (phase 1) presented the analysis of quantitative data obtained by administering a questionnaire to 277 hospital staff (nurses, doctors, and administrators). Chapter 5 (phase 3) presented the analysis of quantitative data to evaluate the key performance indicators (KPIs) based on the Canadian Emergency Triage System (CTAS). Chapter

6 (phase 2) presented a thematic analysis of the qualitative data obtained by interviewing 11 patients who had attended the EDs. This chapter presents an integrative discussion of the results provided in Chapters 5 and 6, focusing on providing evidence to address the research questions in the context of the literature.

7.2 ED Structure

This section addresses research sub-question 1: *Do all the accredited public hospitals in Saudi Arabia have the same ED structure?* The findings of this study regarding the structure of EDs were limited to the demographic data and human resource utilisation variable in the questionnaire.

In terms of the nationalities of the human resources, the questionnaire survey responses suggested that Hospital R employed a high proportion of non-Saudi staff in the ED, whilst Hospital H employed a low proportion of non-Saudi staff, which was also represented by a higher proportion of male respondents. There were, however, no statistically significant associations or dependencies between the four hospitals and the other demographic characteristics of the participants (i.e., age, time working in emergency department, highest medical degree, and occupational category).

The questionnaire data indicated that the overall score for staff perceptions of human resource utilisation (which included staff training and other plans for improving the quality of the ED staff) was slightly higher than the midpoint of the 5-point scale (Mean = 3.70) generally reflecting agreement with the questionnaire items. On average, most of the hospital staff perceived that the overall level of human resource utilisation was relatively above the average except for the staff of Hospital B who showed more positive agreement. More clearly, the quantitative results (see Table 5.16) indicated the scores for human resource utilisation perceived by the staff were higher at

Hospital B (Mean = 4.06) and Hospital R (Mean = 3.87) than at Hospital U (Mean = 3.60) and Hospital H (Mean = 3.23). These differences might be attributable to different reasons. First, an inadequate number of ED staff, especially nursing staff in 300-bed hospitals like Hospitals H, R and U may adversely affect key ED throughput metrics. Lower staffing may also lead to an increase in 'left without being seen' rates and increased ED care times. More clearly, except for Hospital B, items included in the human resource utilisation scale, such as continuous medical education, training, rewards and interdepartmental cooperation scored as close to neither agree nor disagree criteria in the survey. The mean of 4.06 in Hospital B indicates the staff expressed stronger agreement with the human resource utilisation items. In addition, the four public hospitals are reference medical complexes in each province, servicing all referrals from other hospitals and PHCs in the same region, which results in overcrowding in the EDs (Dawoud et al., 2016). Therefore, this suggests that staff perceive the utilisation of human resources to be different among the four hospitals. In fact, it was only in 'Hospital B' that the majority of staff agreed that human resources were well utilised in the ED. This suggests that the structure, as measured by human resource utilisation, is different for the four sample hospitals.

Although the patients were not asked to comment directly on human resource utilisation, they provided useful messages and recommendations for ED leaders regarding ED staff improvement that are relevant to this study. Six patients interviewed at the four hospitals recommended that the ED staff needed more training. In addition, one patient at Hospital H, which had the lowest staff scores for the human resource utilisation component of the questionnaire, complained about the inadequate number of staff available in the ED. The conclusion is that the qualitative data provided by the patients and the quantitative data provided by the staff, except for Hospital B, were slightly consistent with respect to their perceptions regarding human resource utilisation. The staff from

Hospital B reported a more positive view of human resource utilisation. Disparities are found between the self-reported perceptions of staff and patients in ED departments as reported in previous studies (Barrett & Schriger, 2015; Broadwater-Hollifield et al., 2014; Patwardhan & Spencer, 2012). The reasons for these disparities may be because individual ED patients tend to report their feelings about their specific health care experiences, whilst ED staff tend to report their overall experiences, based on many hundreds of patients (Almasabi & Thomas, 2017). Another potential factor is biased responding, which is discussed in the limitations section of the conclusion chapter.

This study focused on the perceptions of human resource utilisation as the measure of the ED structure which only provides one aspect of structure. The findings of this study are comparable with those of other researchers working on the structure of EDs in other hospitals in Saudi Arabia as reported in the literature review. Although the current structures of the MOH hospitals in Saudi Arabia should ideally be similar and they should implement the same CBAHI standards and processes (Almasabi & Thomas, 2017), this study suggests there are differences in human resource utilisation, suggesting differences in structure. Mahfouz et al. (2007) reported similar findings, with observed deficiencies in many aspects of the structure of EDs at 30 health care organizations in the south-east region of Saudi Arabia including limited human resources (e.g., inadequate number of nurses and physicians) and limited training (e.g., continuous professional development courses) for the ED staff. Further studies on other aspects of the ED structure are required.

7.3 Staff's Perceptions of Quality Processes and Results

This section addresses research sub-question 2*: Is there a positive relationship between the* staff's *perceptions of the ED quality processes and the* staff's *perceptions of the ED quality results?* The questionnaire data indicated that the overall score for perceptions of quality results (which included

improvements in the quality of care provided to patients, including services related to the triage system and waiting times in the EDs) was above the midpoint of the 5-point scale (Mean = 3.84). Therefore, on average, most of the hospital staff who responded agreed with the questionnaire items and perceived that the overall level of quality of care was relatively good. The quantitative data (see Table 5.16) indicates the scores for quality results perceived by the staff were higher at Hospital B (Mean = 4.11) and Hospital R (Mean = 3.98) than at Hospital U (Mean = 3.82) and Hospital H (Mean = 3.42). ANOVA indicates that the mean scores were significantly different between the four hospitals ($p < .001$). These differences in overall scores were closer in Hospital B and Hospital R, whilst tending to decrease in Hospital U and Hospital H. There might be reasons for these results. The staff in all four hospitals perceived the quality results over the past year as steady, with measurable improvements in the quality of patient satisfaction, quality of care provided to patients, triage systems and maintaining high-quality health services despite the staff shortage. Staff perceptions in Hospitals B and R showed more accountability to these items due to the experiences in accreditation surveys from CBAHI & JCI than Hospitals H and U. Also, leadership commitment to planning, monitoring and evaluation of day-to-day quality of health services in EDs is another possible reason why the hospital staff perceived the quality results more positively. Methods of change over many years of accreditation cycles can enhance the experience of health professionals and make them more involved and accountable for the trend of health services (Almasabi & Thomas, 2017).

The questionnaire data indicated that the overall score for perception of accreditation impact (which also included improvements in the quality of care provided to patients, including the recommendations and improvement in services related to the EDs) was close to 4 on the 5-point

scale (Mean = 3.99). Therefore, on average, most of the hospital staff agreed with the questionnaire items and perceived that the impact of accreditation was relatively good. The quantitative data (see Table 5.16) indicated the scores for the impact of accreditation were significantly higher at Hospital B (Mean = 4.18) and Hospital R (Mean = 4.12) than at Hospital U (Mean = 3.95) and Hospital H (Mean = 3.72). ANOVA indicated that the mean scores were significantly different between the four hospitals ($p < .001$). The magnitudes of the mean accreditation impact scores at the four hospitals nearly matched the same order as the scores for quality results. The staff at Hospital B always consistently provided higher scores for the quality variables, whilst the staff at Hospital H consistently provided lower scores for the quality variables.

7.3.1 Relationship between Quality Processes and Quality Results

In this study, the statistical evidence of correlation analysis indicated that the perceptions of the survey respondents of all of the quality process variables (Patient Satisfaction, Quality Results, Accreditation Impact, Leadership, Strategic Quality Planning and Quality Management) were significantly ($p < .001$) positively correlated with each other, implying that they were strongly multicollinear. Patient outcome is measured by the perception of the quality results variable in this study.

The construction of a structural equation model using PLS-SEM provided statistical evidence to conclude that statistically significant ($p < .01$) positive relationships existed between the staff's perceptions of the ED quality processes and the staff's perceptions of the ED quality results at the four hospitals. However, the PLS-SEM model was based on the combined data for all of the participants at the four hospitals and did not take into account the results of ANOVA, indicating that the mean scores for the seven quality variables were significantly different between the four hospitals and between different professional categories (doctors, nurses, and directors).

The analysis of the quantitative survey data did not provide evidence to legitimately deduce cause-and-effect relationships between two or more variables solely on the basis of the observed statistical associations between them (Freedman, 2010; Tacq, 2011). It is a fallacy to assume that 'SEMs aim to establish causal relations from associations alone' (Bollen & Pearl, 2013, p. 308).

The statistical evidence obtained in this study regarding the relationships between quality processes and results is consistent with previous studies. For example, Yildiz and Kaya (2014) found that nurses gave high scores for the items concerning accreditation impact. They found a statistically significant positive correlation between the dependent variable (quality results) and the independent variable (accreditation impact). Another study conducted by El-Jardali et al. (2014) on the impact of accreditation of primary healthcare centres as perceived by healthcare providers and directors in Lebanon found that the scales measuring Leadership had the highest mean score followed by Accreditation Impact, Human Resource Utilisation, and Patient Satisfaction. Also, the statistical analysis showed that Strategic Quality Planning, Patient Satisfaction and Staff Involvement were associated with a perception of higher Quality Results. An earlier study, also by El-Jardali et al. (2008), found that the quality process variables (leadership, operational focus and staff involvement in the accreditation process) were associated positively with quality results.

The conclusion is that a positive relationship was found between staff perceptions of the ED quality processes and the staff perceptions of the ED quality results for the survey respondents. This conclusion is consistent with the aforementioned studies and the Donabedian model predicting that the processes and outcomes in a healthcare system should theoretically be linearly related to each other (Donabedian, 2005).

7.4 Staff Perceptions of Quality Processes vs. KPIs

This section addresses research sub-question 3: *Is there a positive relationship between the staff's perceptions of the ED quality processes and the ED quality process indicators?* The perceptions of the staff at the four hospitals of the ED quality processes suggesting that quality of care was relatively good (indicated by the above mid-point scores obtained using the questionnaire) were not consistent with the quantitative analysis of the KPIs based on the CTAS at the four hospitals. A statistical analysis indicated the frequencies of the KPI benchmarks were not significantly dependent on the hospitals with negligible effect sizes. None of the four hospitals complied with the benchmarks for waiting times. Three of the hospitals consistently complied with the benchmarks for length of stay for 12 months, whilst Hospital B complied with the benchmark for length of stay for 11 months. The four hospitals did not comply with the KPI benchmarks for time from registration to physician in CTAS levels 1, 2, and 3 (i.e., 1: Resuscitation – Conditions that are threats to life or limb. Level 2: Emergent – Conditions that are a potential threat to life, limb or function. Level 3: Urgent – Serious conditions that require emergency intervention). The four hospitals only complied with the benchmark for time from registration to physician in CTAS 4 and 5. Notably, all four hospitals failed to comply with KPI 3 (Time from Decision to ICU) benchmark (4 hours) while only Hospital B and Hospital U complied with KPI 4 (Time from Decision to Ward) benchmark (4 hours). The majority of non-compliance with the KPI benchmarks was not consistent with the perceptions of staff who indicated slight agreement with the quality of the triage system. Non-compliance with the KPI benchmarks appeared to be more consistent with the patients' comments regarding the mishandling of urgent cases and the long waiting times. Also, this suggests that the MOH hospitals may still be suffering from the non-availability of beds in the

critical care areas, especially ICU, CCU and NICU which limits patient transfers from ED to the ICU and wards.

Table 7.1 shows that the staff perceptions of quality processes were higher at Hospital B (Mean = 4.11) and Hospital R (Mean = 3.98) than at Hospital U (Mean = 3.82) and Hospital H (Mean = 3.42). ANOVA indicated that the mean scores were significantly different ($p < .001$). The quantitative data based on the staff perceptions of Hospital B and Hospital R were more consistent with the results of only two quality processes indictors (Length of Stay and Time from Decision to Ward) than Hospital H and Hospital U. This suggests that Hospital B and Hospital R were more committed to following the ED standards that require a fully functional emergency care and an, effective triage system which are fully resourced and focussed on patient care, with detailed and accurate documentation. These standards should be initiated and professionally maintained (CBAHI, 2016). Also, key ED quality indicators based on time are in place and monitored (CBAHI, 2016).

Table 7.1: Comparison of Staff Perceptions of the Quality Variables and the KPI Benchmarks

Quality processes variables	Hospital							
	1 (H)		2 (B)		3 (U)		4 (R)	
	Mean	SD	Mean	SD	M	SD	Mean	SD
Patient Satisfaction	3.46	0.81	4.12	0.36	3.64	0.59	4.11	0.61
Human Resource Utilisation	3.23	0.83	4.06	0.45	3.60	0.65	3.87	0.69
Accreditation Impact	3.72	0.84	4.18	0.22	3.95	0.66	4.12	0.62
Leadership	3.59	0.71	4.24	0.36	3.76	0.65	4.07	0.55
Strategic Quality Planning	3.11	0.94	4.13	0.35	3.61	0.71	3.95	0.66
Quality Management	3.47	0.84	4.14	0.33	3.84	0.65	4.19	0.63
KPI/ED Quality Processes Indicators	Benchmark compliance over 12 months according to CTAS levels (1,2,3,4 &5)							
	1 (H)		2 (B)		3 (U)		4 (R)	
Length of Stay	Compliant for 12 months with all CTAS levels		Compliant for only 11 months with all CTAS levels		Compliant for 12 months with all CTAS levels		Compliant for 12 months with all CTAS levels	
Registration to Physician	Not compliant for CTAS levels 1,2 &3		Not compliant for CTAS levels 1,2 &3		Not compliant for CTAS levels 1,2 &3		Not compliant for CTAS levels 1,2 &3	
Decision to ICU	Not compliant		Not compliant		Not compliant		Not compliant	
Decision to Ward	Not compliant		Compliant		Not compliant		Compliant	

The results presented in Table 7.1 indicate only a weak positive relationship between the staff's perceptions of the ED quality processes and the ED quality process indicators. The staff at Hospitals B and R were slightly more positive in their perceptions of the quality processes in their EDs and these two hospitals also demonstrated better performance according to ED triage benchmarks. However, the disconnection between the data sources, the different timeframes and the different collection methods limited the analysis of the associations between the quality process variables and the KPIs. Despite these constraints, the data indicated a lack of strong positive relationships. This conclusion is consistent with previous research conducted in Iran suggesting that although the hospital staff were generally aware of the importance and usability of quality

process indicators, there was a concomitant lack of commitment among the staff to support and maintain internal quality improvement processes (Hashjin et al., 2014). Similarly, Alhassan et al. (2015) working in Ghana reported the need to intensify the commitment of hospital staff to existing quality improvement initiatives.

7.5 Staff Perceptions vs. Patient Perceptions

This section addresses research sub-question 4: *Is there a positive relationship between* staff's *perceptions of ED quality processes and patient perceptions of quality of care?* The questionnaire data indicated that the overall score of the staff in the four hospitals for Patient Satisfaction was just above the midpoint of the 5-point scale (Mean = 3.84). Therefore, on average, most of the responding hospital staff were slightly above neither agree nor disagree with the items, therefore slightly perceiving that the overall level of patient satisfaction was relatively good. Thematic analysis of the patients' interview responses showed that 63.7 % of the patients reported that they were very satisfied or satisfied. There were, however, discrepancies between the perceptions of the staff and patients. The thematic analysis of the interview responses indicated that the patients did not express the same level of satisfaction at the four hospitals. The views of the patients at Hospital B were the most variable, ranging from very satisfied, moderately satisfied, to not satisfied. The views of the patients at Hospital H and U were more consistent, reporting that they were very satisfied or satisfied while the staff perceptions of patient satisfaction in Hospital H and Hospital U were the lowest of the four hospitals. The patients at Hospital R reported only acceptable or neutral satisfaction. The quantitative results in Table 7.2 indicate the scores for patient satisfaction perceived by the staff were higher at Hospital B (Mean = 4.12) and Hospital R (Mean = 4.11) than at Hospital U (Mean = 3.64) and Hospital H (Mean = 3.46). Only one patient

reported an acceptable level of satisfaction with Hospital R, even though the staff perceived that patient satisfaction was high at Hospital R.

Table 7.2: Staff vs. Patient Perceptions

Staff Perceptions of patient's satisfaction	Hospital							
	1 (H)		2 (B)		3 (U)		4 (R)	
	Mean	SD	Mean	SD	M	SD	Mean	SD
Patient Satisfaction	3.46	0.81	4.12	0.36	3.64	0.59	4.11	0.61

Patient satisfaction levels of quality of care	Hospital							
	1 (H)		2 (B)		3 (U)		4 (R)	
	Counts (Patient)	(%)	Counts (Patient)	(%)	Counts (Patient)	(%)	Counts (Patient)	(%)
Very satisfied	2	(18.2)	1	(9.1)	1	(9.1)		
Satisfied	2	(18.2)			1	(9.1)		
Moderate			1	(9.1)				
Acceptable							1	(9.1)
Neutral							1	(9.1)
Not satisfied			1	(9.1)				

The conclusion is that the qualitative data provided by the patients and the quantitative data provided by the staff were inconsistent with respect to the perceptions of the relative levels of patient satisfaction at the four hospitals. The staff perceptions of ED quality processes, quality outcomes and patient satisfaction tended to be more positive than the reported patient satisfaction and perceptions of quality of care. This result may be because of the small sample of patients who may be biased. Therefore, although the data indicate no positive relationship, the results based on the mixed methods approach did not allow a very robust analysis.

Such disparities between the self-reported perceptions of staff and patients in ED departments in different hospitals have been reported in previous studies (Barrett & Schriger, 2014; Broadwater-Hollifield et al., 2014; Patwardhan & Spencer, 2012). The reasons for these disparities may be because the small number of interviewed ED patients tended to report their feelings about their specific health care experiences, whereas the responses of a large number of ED staff, when estimated as mean scores, reflected their overall experiences, based on many hundreds of patients. Mean scores generalise the perceptions of individuals so that they can be applied to the populations from which the sample was drawn. Generalisation invites criticism due to the ecological fallacy, which asserts that the statistical inferences derived from a survey apply to the population but not necessarily apply to every individual member of that population (Idrovo, 2011). The tension between the qualitative and qualitative methodologies used in this study could be at least one of the reasons for the provision of contradictory results between the patients and the staff (Denzin & Lincoln, 2008). Another potential contributory factor is biased responding, which is discussed in the limitations section in chapter 8.

7.6 Accreditation and Performance

This section addresses research sub-question 5: *Is accreditation associated with better performance in ED quality process indicators?* The staff's perception of Accreditation Impact measured with the questionnaire was very close to 4 on the 5-point scale (Mean = 3.99) in all four hospitals. Therefore, on average, most of the hospital staff agreed with the questionnaire items and perceived that the overall impact of accreditation was relatively good. The mean scores for Accreditation Impact were significantly higher at Hospital B and Hospital R than at Hospital U and Hospital H. In contrast, the KPI benchmarks were not significantly different between the four hospitals with negligible effect sizes. Three of the four hospitals consistently complied with the

benchmarks for the length of stay indicator whilst Hospital B complied with the benchmark of the length of stay for 11 months only. Quantitative data of staff perception at Hospital B and Hospital R were more consistent with results of only two quality processes indictors (Length of Stay and Time from Decision to Ward) than Hospital H and Hospital U. Last of all, none of the four hospitals complied with the benchmarks for waiting times (Time from Registration to Physician and Time from Decision to ICU).

A definite positive relationship was not found between the staff's perceptions of the impact of accreditation and the measured ED quality process indicators. This conclusion is not consistent with previous qualitative research conducted in the USA, suggesting that the publication of quality process indicators at 29 randomly selected accredited hospitals appeared to have stimulated the administrators, nurses, and physicians to improve their levels of performance (Hafner et al., 2011). This conclusion was also not consistent with the view that accreditation has a positive impact on the process and implementation of change in Saudi hospitals, resulting in improvements in the delivery of patient care and other health services (Almasabi & Thomas, 2017). The different finding of this study is discussed further in the Limitations section.

7.7 Theoretical Implications

This section addresses the main research question:

What is the relationship between the structure, processes and patient outcomes in emergency departments in accredited public hospitals in Saudi Arabia? In order to address this question, an empirical model based on the quantitative survey data provided by the hospital staff was constructed using PLS-SEM. This empirical model supported the Donabedian framework (Donabedian, 2005) because positive changes in ED structure, represented by Human Resource Utilisation, predicted positive improvements in ED processes, represented by a linear combination

of Leadership, Quality Management, Patient Satisfaction, Accreditation Impact, and Strategic Quality Planning. Positive improvements in ED processes, in turn, predicted a positive improvement in ED outcomes, represented by perceptions of Quality Results. The conclusion is that the results of PLS-SEM based on the perceptions of the hospital staff contributed to increased knowledge and understanding of the relationships between the structure, process and outcome dimensions of the Donabedian model with respect to EDs in Saudi Arabia. This assertion is consistent with the conclusions of other researchers who also used empirical data to support the Donabedian model**,** predicting that positive correlations between structure, process and outcome reflect the quality of healthcare systems in Europe and USA (Ameh et al., 2017; Kunkel et al., 2007; Moore et al., 2015; Rademakers et al., 2011).

The positive correlations estimated by PLS-SEM based on the self-reported data collected from the staff in this study suggest the perceptions that EDs that have an appropriate structure tend to perform well in terms of clinical processes, which are positively associated with patient outcomes. However, the empirical model constructed in this study was incomplete because it did not take into account the performance on the KPI indicators (e.g., non-compliance with benchmarks) or the negative perceptions of the patients (e.g., e.g., long waiting times, mishandling of urgent cases, and lack of staff training). The results of PLS-SEM, based only on the survey data provided by the hospital staff, may be misleading because the perceptions of the staff tended to conflict with the KPI indicators and the perceptions of the patients.

7.8 Conclusion

This chapter discussed the findings of this research from different aspects including the relationship between quality variables namely, structure, process and outcome from the health professionals' perceptions. This was followed by a comparison of the results with the previous studies. ED quality processes indicator (KPIs) results post-accreditation in the public hospitals were examined according to the benchmarks. The perceptions of ED patients on the quality of care provided in the ED were also explored and compared with health professionals' perceptions of quality process in the ED. The next and final chapter summarises this study, discusses its strengths and limitations and provides recommendations for clinical practice and future research.

Chapter 8: Conclusions and Recommendations

8.1 Introduction

This chapter outlines the main conclusions of this study and considers the strengths and weaknesses of the study and conclusions. The recommendations for clinical practice and further research are also presented.

8.2 Overall Conclusions

This study aimed to answer the question *'What is the relationship between ED structure, processes and patient outcomes in emergency departments in accredited public hospitals in Saudi Arabia?'* As illustrated by the PLS-SEM analysis, the results of this study support Donabedian's contention that structure and process are important for desired outcomes. While all of the paths were significant, the strongest pathway was from the ED processes, (comprising the variables of the staff perceptions of Leadership, Quality Management, Patient Satisfaction, Accreditation Impact and Strategic Quality Planning) to the outcomes which were measured as the staff perceptions of the ED quality results. Patient satisfaction was included as a process variable because it was measured by staff perception and not by actual patient satisfaction.

This finding is further supported by the answers related to the five research sub-questions.

1. *Do all accredited public hospitals in Saudi Arabia have the same ED structure?*

It would have been difficult to comment on the structure-process outcome relationship if all of the sample hospitals had exactly the same structure. However, the four accredited public hospitals in Saudi Arabia did not appear to have the same ED structures in terms of the perceptions of utilisation of the human resources. The perceptions of staff reported in the survey suggested

differences between the hospitals, with staff from Hospital B reporting a more positive view of the utilisation of human resources within the ED than the staff in the other hospitals. While there was some agreement between the qualitative data provided by the patients and the quantitative provided by the staff, the small sample of patient data makes it difficult to draw strong conclusions.

2. *Is there a positive relationship between the* staff's *perceptions of the ED quality processes and the staff's perceptions of the ED quality results?*

Moderate to strong positive relationships were found between the staff's perceptions of the ED quality processes and the staff perceptions of the ED quality results. It was not possible to prove that these relationships were causal using SEM, but generally staff who were more positive about the ED quality processes were also more positive about the ED quality results.

3. *Is there a positive relationship between the* staff's *perceptions of the ED quality processes and ED quality process indicators?*

Weak positive relationships were found between the staff's perceptions of the ED quality processes and the key quality performance indicators in different hospitals.

4. *Is there a positive relationship between* staff's *perceptions of ED quality processes and patient perceptions of quality of care?*

The relationship between the staff's perceptions of ED quality processes and the patient perceptions of quality of care were difficult to determine due to (a) the different perspectives of the staff and the patients towards the concept of quality of care; and (b) the possibility that the staff's and patients' answers to some of the researchers' questions may be contaminated by response bias (as discussed below).

5. Is accreditation associated with better performance in ED quality process indicators?

No clear positive relationship was found between the staff's perceptions of the impact of accreditation and the measured ED quality process indicators. In addition, the Accreditation Pathway had the least strength in the PLS-SEM model, with perceptions of Quality Management and Patient Satisfaction having stronger links to the ED processes.

In summary, the findings of this study confirm the importance of structure, in this case in relation to human resource utilisation, and essential quality processes to perceptions regarding the achievement of high quality results. ED structures were different across the sample hospitals, suggesting lower performing hospitals could learn from the human resource utilisation of higher performing hospitals. While Accreditation Impact was a useful variable contributing to the ED quality processes, its relationships were not strong and we were unable to find a direct link between staff perceptions of the impact of accreditation and the staff perception of quality results, the KPI quality benchmarks or the reported patient satisfaction.

8.3 Strengths of This Study

The conclusions of this study were enhanced by the strength of the mixed methods approach to address the overarching research question: *What is the relationship between ED structure, processes and patient outcomes in emergency departments in accredited public hospitals in Saudi Arabia?*

There is a lack of empirical evidence in emergency quality of care initiatives, especially evaluating the structure, process and patient outcomes in the accredited public hospitals in Saudi Arabia. This gap in the body of knowledge might create ambiguity and legitimacy issues for executives in the level of hospital management and policy makers at both the regional and ministerial level. Several

Middle Eastern countries initiated quality initiatives on health accreditation without knowing or having evidence that there would be improvements in the quality of care in EDs. This raise doubts as to the benefits of hospital accreditation and its efficacy on health care services. The literature prompts us to reconsider how ED's quality of care in accredited public hospitals contributes to a better understanding of staff and patient experiences. Therefore, without any empirical evidence of the quality of care for emergency services in public hospitals, the feasibility of accreditation will remain anecdotal, influenced by political ideology and driven by bias.

This study applied a mixed method approach which provided more in-depth information and knowledge of the problem as well as rich datasets, based on the perceptions of staff and patients in EDs, as well as the analysis of compliance with KPI benchmarks. By looking at the research problem from three different perspectives, the researcher could provide a more comprehensive answer to the research question than could be obtained by looking at only one perspective (Creswell, 2014).

The researcher was empowered to evaluate the quality of care in emergency departments at four accredited public hospitals in Saudi Arabia from three different perspectives. In phase 1, a statistical analysis was conducted to evaluate the experiences and perceptions of the staff in the EDs using a questionnaire with variables operationalised using Likert scales. The PLS-SEM used to evaluate and predict the relationship between the quality variable of the Donabedian dimensions of structure, process and outcome strengthened the results of this study. Phase 2 comprised a thematic analysis of the responses of patients and their lived experiences in emergency departments. The patients' voices were strong pillars to support the conclusions of this study. In phase 3, quantitative data were analysed to measure the key performance quality process indicators (KPIs) and benchmarks in relation to the triage system in the EDs after accreditation. The KPIs

provided an alternative source of information, based on emergency clinical audit and patient-centred program measures under the supervision of the Saudi MOH. In this study, four clinical process indicators were analysed to add more understanding of compliance with benchmarks for quality indicators in EDs.

The strength of this study was also that the results and conclusions helped to bridge a gap in knowledge and clinical practice. This is the first time a study was conducted in Saudi Arabia to examine the aspects of quality of care in EDs in accredited public hospitals from the perspectives of staff and patients and analysed the quality reports. It was apparent from the literature review that there is a limited evidence in relation to evaluating the Donabedian model in quality of care in EDs. Therefore, this study contributed to a large extent by adding to the body of literature on this topic.

No previous attempts have been made to determine if there is post-accreditation improvement in the quality of care in EDs in public hospitals in Saudi Arabia. Previous studies have not focused specifically on quality of care in EDs, and the continuity or performance of health care delivery after accreditation of EDs has not been effectively monitored. The significance of the conclusions is that they provide new information on the theoretical and practical value to ED doctors, nurses, and directors regarding the relationships between ED structure, processes and patient outcomes; the extent to which accredited public hospitals in Saudi Arabia have the same ED structure; the relationship between the staff's perceptions of the ED quality processes and the staff perceptions of the ED quality results; the relationship between the staff's perceptions of the ED quality processes and ED quality process indicators; the relationships between the staff's perceptions of ED quality processes and patient perceptions of quality of care; and the extent to which accreditation is associated with better performance in ED quality performance indicators.

8.4 Limitations of This Study

The researcher was aware that external and internal validity issues may have an impact on the conclusions of this study. External validity refers to the extent to which the conclusions may be transferable or generalized to other times, places, and populations. Internal validity refers to the credibility and reliability of the conclusions, focusing on the extent to which the conclusions can be warranted, based on how well the researcher can rule out alternative explanations, including potential sources of bias (Creswell, 2014).

The conclusions of this study were based only on the interpretation of quantitative and qualitative data collected in four EDs within one year of accreditation. It is possible that these conclusions may have limited external validity because the structures, processes, and outcomes observed at these four EDs may not be the same as those observed in other EDs at other times and in other ED populations in Saudi Arabia or elsewhere. The staff and patients in the EDs at the four hospitals were not necessarily representative of the entire population of staff and patients in EDs in Saudi Arabia. No comparisons were made across EDs at the large number of other accredited hospitals in Saudi Arabia. Furthermore, no evidence was provided to determine sustainability for more than one year across multiple accreditation cycles.

The external validity of the conclusions of this study based on the phase 2 findings may be limited because the purposive sample selected for the interviews was limited to 11 patients, three women and eight men. Gender bias may occur in the self-reported data if men and women are not represented in equal proportions consistent with their attendance at the EDs. Furthermore, gender-of-interviewer bias may also be introduced because some interviewed respondents may answer questions differently, depending on whether the interviewer is male or female (Flores-Macias & Lawson, 2008; Kianersi, Luetke, Jules, & Rosenberg, 2020). Gender bias in this study was

associated with the difficulties recruiting women for interviews in Saudi Arabia. Previous studies have indicated that female patients being treated in primary care institutions may express significantly less satisfaction compared to male patients with respect to their perceptions of nursing care, physician care, and communication (Cleary, Zaslavsky, & Cioffi, 2000; Foss, 2002; Leung & Cheng, 2016). The inequality of gender representation in the sample may have biased the results of the thematic analysis of the qualitative data, however, this source of bias is difficult to avoid. For example, Al-Amer et al. (2018) discussed how cultural beliefs and ways of thinking need to be considered when interviewing Arab participants. Qualitative studies require matching the gender of the participant with the gender of the researcher because Arab women feel uncomfortable expressing their personal opinions before men. Benstead (2018) reported that conducting research on social science in the Arab context is more challenging than in other regions because many Arabs are highly rule-oriented and are bound by many authoritarian laws, rules, regulations and controls. Arab respondents may not answer honestly when interviewed due to the effects of authoritarianism which curtails their freedom of speech.

The internal validity of the conclusions of this study may be threatened by other sources of bias that are inherent in all types of self-reported data. The conclusions could potentially be contaminated by response bias, which is a general term for a wide range of distortions of the truth that are prevalent in all types of research that require the participants to self-report their answers to questions, including interviews and questionnaires (Paulhus, 1991).

Self-reported perceptions are not necessarily factual because the respondents may answer carelessly or they may sometimes deliberately or unconsciously distort the truth, known as response bias. On average, between 5% to 15% of respondents provide careless answers to survey

questions (Meade & Craig, 2012). Choi and Pak (2012) identified a total of 48 sources of bias in self-reported questionnaire data administered in clinical settings.

Saris et al. (2010) reviewed the bias associated with different types of survey response formats devised to measure constructs or scales. They concluded that great care should be taken to interpret the responses. In particular, the researcher must always keep in mind the drawbacks of using Likert scales with agree/disagree response options. It is particularly necessary to consider the response bias caused by using a 5-point scale to measure each item in a survey using a middle option (e.g., "neither disagree or agree"; "don't know"; or "neutral"). This format was originally designed to evaluate the opinions of consumers in marketing research. The middle option is generally applicable when the consumer does not actually know anything about the usability of a product or service. Offering a middle option to the respondents when they are asked to express their opinions or attitudes about social, operational, or management issues makes a significant difference to the conclusions that are drawn from the statistical analysis of survey data (Bishop, 1987). This source of bias probably occurs because the middle option may provide an easy solution for those respondents who are lazy and do not wish to expend a lot of time and effort to decide exactly which level of agreement to choose. If they did not have a middle option, they would probably endorse a more realistic option toward the disagreement or agreement end of the scale. The most frequently chosen option in the 5-point scale was agree which may be a consequence of acquiescent response bias. There is a tendency for some Arab respondents to consistently agree with all of the items in an interview or questionnaire survey, irrespective of whether or not they actually agree in reality. This peculiar form of cultural communication style called extreme or acquiescent response bias may sometimes be a threat to the validity and reliability of self-reported data collected from Arab

participants (Baron-Epel et al., 2010; Benstead, 2018; Harzing, 2006; Smith, 2004).

The responses to self-report surveys may also be invalidated by social desirability bias. This source of bias is caused by the respondents faking their answers to survey items in such a way that they exaggerate, inflate, or over-report virtuous events, but neglect or under-report undesirable events. For example, in the present survey, some respondents may indicate that they agree with items such as 1. The emergency department (ED) leaders provide highly visible leadership in maintaining an environment that supports quality improvement; 10. ED staff are given adequate time to plan for and test quality improvements; 16. ED staff are given education and training in how to identify and act on quality improvement opportunities based on recommendations from accreditation surveys to improving quality; and 30. The ED does a good job of assessing current patient needs and expectations. However, the same respondents may, in reality, disagree with these items, but are reluctant to indicate this in the survey because of socially desirable reporting. Socially desirable responding has been observed in surveys conducted in many healthcare settings, probably because health care providers and administrators feel that they have an obligation to portray themselves and their organizations in a good light. For example, nurses in particular are prone to 'faking it' (Van de Mortel, 2008, p. 40). Social desirability bias may significantly influence the data collected from health care providers in patient satisfaction surveys leading to misleading overestimations of the levels of patient satisfaction. Estimates of the levels of patient satisfaction may often be most inflated by those health care providers who have the least satisfied patients (Mazor et al., 2002). Obtaining valid and reliable data to measure patient satisfaction is extremely difficult in practice and biased patient satisfaction surveys are considered to be a threat to the measurement of healthcare quality in emergency departments (Barrett & Schriger, 2015; Broadwater-Hollifield et

al., 2014; Patwardhan & Spencer, 2012). Managers may feel obliged to defend their organisations and safeguard their jobs by distorting the truth, indicated by a lack of congruence between their personal opinions of certain events and other more objective measures of the same events (Mathews & Diamantopoulos, 1995; E. R. Thompson & Phua, 2005). The researcher did not measure social desirability response bias in this survey using one of the tools devised specifically for this purpose (e.g., Barger, 2002; Holtgraves, 2004). Therefore, it is possible that some respondents in the present survey may have reported inflated levels of hospital quality processes and outcomes that were misleadingly higher than what they actually should be in reality.

8.5 Recommendations for Clinical Practice

Taking into account the limitations discussed above, the empirical evidence collected in this study points toward the need to consider structure and process in planning initiatives to further improve the quality of care of patients attending emergency departments in accredited public hospitals in Saudi Arabia. Further improvement of the quality of care of patients in Saudi Arabia is consistent with the premises of Saudi Vision 2030 to promote higher quality services, easier access to those services, a healthier lifestyle for citizens, and addressing competency issues with professional staff (Al-Ghalayini, 2018; Alharbi, 2018).

The researcher's recommendations to improve practices in EDs are based on the evidence that good quality services can only be successfully implemented in EDs that have developed a quality culture (Stahr, 2001; Tyagi, Cook, Olson, & Belohlav, 2013). Quality is not an extra element in providing services, but must be built into the structure, processes and outcomes of the EDs. The value perspectives of all nurses, doctors, and administrators working in EDs need to be consistent with their commitment to provide high quality services to all patients at all triage levels at all times. The goal of every ED is to have a clear strategic commitment to provide quality services at all

levels. Based on the study findings, there are opportunities for the more efficient utilisation of resources in some hospitals (structure), improvement in the quality of the services provided (processes), that will assist in promoting patient health (outcomes) and this should become the main future goals of ED management.

The researcher recommends that health care policy-makers in Saudi Arabia need to gain a better understanding of the factors associated with the dimensions of the Donabedian model and the relationships between them in order to satisfy the need to improve ED structure, processes and outcomes and improve the quality of care for Saudi citizens in accredited public hospitals. In particular, the following reasons for non-compliance with KPI benchmarks and the complaints of the patients need to be addressed to improve the structure, process and outcome dimensions of the Donabedian model and the inter-relationships between these three dimensions.

According to the interviewed patients, better facilities, including a more pleasant environment for waiting patients and their families, are required in EDs. This finding is consistent with the conclusion of Mahfouz et al. (2007) who found that deficiencies occur in many aspects of the infrastructure of EDs. The interviewed patients in the current study also reported that overcrowding of patients in the EDs occurs in the evening, during night shifts, and at weekends, because there are less staff on duty. The patients complained that the shortage of staff in EDs cause a delay in the fluency of work in the EDs. The ED staff are constantly working under pressure and so ideally, more staff are required to reduce pressure in the EDs. More staff are required to be on duty in the evening and during night shifts and at weekends. This recommendation is consistent with previous studies indicating that EDs in Saudi Arabia are required to care for more patients than they have been structurally designed for or staffed to accommodate. These problems may result in decreased patient satisfaction (Bukhari et al., 2014; Dawoud et al., 2016; Househ &

Yunus, 2014). Currently, if the medical condition of the patient improves, the procedure stops and the case is evaluated again (e.g. a change from CTAS 3 to CTAS 2). Stopping the procedure should be avoided because it increases waiting time.

Furthermore, the patients suggested that there should be more incentives and opportunities for ED staff to participate in continuous professional training to improve their skills. The objective behind training initiatives for health professionals in Saudi Arabia is to meet criteria for quality performance improvement (Almasabi, 2013). According to guidelines ER3-5 in the CBAHI (2016), it is essential for hospital managers to provide adequate resources of experienced nurses at all times and that the nurses must receive continuous training and competency assessment. Akachi and Kruk (2017) suggested that data for identifying the need for more training should be derived from health-facility records. However, the current study identified the need for more training of ED staff based on the perceptions of patients.

Most of the patients who attended the EDs in this study and agreed to be interviewed suffered from chronic conditions but were not urgent cases, and so after triage, they experienced long waiting times. This finding is consistent with other researchers who reported that the majority of patients who attend EDs in Saudi Arabia are non-urgent cases, resulting in delayed care for more acutely ill patients (Alyasin & Douglas, 2014; Dawoud et al., 2016; Khattab et al., 2019; Mahfouz et al., 2007). Non-urgent cases should ideally be tested to determine if they are eligible for emergency care. Non-urgent cases should be then be diverted to a fast-track system, which means after the triage, the nurse tells the patient to go to the nearest primary health care centre for medical care. As a strategy to relieve the burden of high numbers of chronically disabled persons attending EDs, the Ministry of Health could consider the potential implementation of community-based rehabilitation centres (CBRs). The introduction of CBRs is a strategy to provide local opportunities

for the treatment of persons with physical disabilities. CBR is generally implemented through the combined efforts of patients, their families, organisations and communities, and relevant government and non-governmental health, education, vocational, social and other services. CBR programs aim mainly to care for patients recovering from surgical treatment, stroke, arthritis, scoliosis, palsy, and other physiological and musculoskeletal injuries and disorders outside public health services (Deepak et al., 2013). CBR programs have been implemented in several countries across the Asia-Pacific region to provide an essential service to help improve the quality of life, functional independence, autonomy, community inclusion, and empowerment of people with disabilities in their local communities (Cayetano & Elkins, 2016).

8.6 Recommendations for Further Research

Based on the evidence collected in the current study, the researcher recommends that future quality improvement projects using mixed methods need to be evaluated across a larger number of EDs in Saudi Arabia. Longitudinal studies rather than cross-sectional studies are essential in order to evaluate the long-term impact of accreditation over several cycles, rather than just one cycle after one year. In order to ensure the collection of precise and accurate data, these projects should take into account and attempt to ameliorate the limitations of the current study (e.g., with respect to external validity, gender inequality, and response bias). For example, at least 10% of each demographic group in a target population should agree to participate in a survey for the findings to exhibit external validity (Creswell, 2014). More female Arab researchers need to be employed to interview female Arab patients (Al-Amer et al., 2018). Several methods are currently available to measure and eliminate response bias in self-reported survey data, including the Marlowe-Crowne Social Desirability Scale (Holtgraves, 2004). Bogus questions, such as “if you are reading this - please answer strongly agree” should be included in all questionnaires. Bogus questions are

essential to assist in determining if there were careless participants who may provide incorrect responses, such as “neither agree nor disagree” showing that they are not reading the question properly (Lavrakas, 2008).

Future research projects should focus on evaluating the long -term impact on the quality of patient care in EDs, particularly with respect to the quality deficiencies identified in this study, including improvements in the infrastructure of ED facilities; reducing the waiting times and overcrowding of patients in EDs; prioritizing urgent cases in EDs; ameliorating staff shortages in EDs; preparing for unexpected events in EDs; rationalising the triage procedure in EDs; and increasing the participation of ED staff in continuous professional training. These projects could involve the use of stochastic frontier analysis, which is a statistical method of evaluating the factors associated with hospital efficiency (e.g., measures of performance quality) using a Bayesian maximum likelihood random-effects and time-invariant efficiency model. The conclusions based on the results of stochastic frontier analysis may be applied in practice to evaluate the efficiency of specific hospital policies and to promote the implementation of healthcare policy reforms (Hamidi, 2016; Pross, Strumann, Geissler, Herwartz, & Klein, 2018; Rosko & Mutter, 2011).

An evidence-based health improvement project must have a built-in evaluation process. It is essential to evaluate any interventions that are designed in the future to improve the quality of care of patients in EDs. A Plan-Do-Study-Act (PDSA) cycle is recommended, because it is a commonly used model to evaluate quality improvement initiatives in health care, strictly oriented towards the patient and aimed at reducing costs while increasing quality (Višnjić, Veličković, & Jović, 2012).

Healthcare systems worldwide try to develop new strategies, the implementation of which would lead to the end result - improvement of health care quality. The PDSA cycle consists of a logical sequence of repetitive steps to ensure continuous health care improvement over a long period of time. In order to reduce risks and effectively manage available resources, a PDSA intervention involving an improvement project should initially be implemented in the short term, before a long-term program can be supported (Langley et al., 2009). If an intervention is found to be effective, it may be implemented for the long-term; if not, the researcher must return to the planning phase and modify the intervention.

Finally, because the proposed quality improvement projects for EDs are underpinned by the Donabedian model, all researchers are encouraged to consider Donabedian's (2005) assertion that the evaluation of quality of health care systems must be linked objectively to structures, processes, and outcomes. Researchers should also be aware that their studies to improve the quality of EDs should ideally be rooted subjectively on genuine love and concern for individual patients and their needs.

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Appendices

Appendix A: Approval from original source of the questionnaire

FW: Hi Dr. Fadi, , this is Fahad Alshammari (PhD Student) at Monash University, Australia

On 3 October 2016 at 18:08, Diana S. Jamal <dj06@aub.edu.lb> wrote:

> Dear Fahad Alshammari,
>
> Kindly find attached the requested tool for use for the purpose of your PhD thesis.
> Please make sure to properly cite the took using the following:
>
> El-Jardali F, Jamal D, Dimassi H, Ammar W, Tchaghchaghian V. The impact of hospital accreditation on quality of care: perception of Lebanese nurses. Int J Qual Health Care. 2008 Oct;20(5):363-71
>
> Regards,
> Diana
>
> Diana Jamal, MPH
> Faculty of Health Sciences
> American University of Beirut
> Tel. +961-1-350000 ext. 2942
> Fax: +961-1-744470
> Alternate Email: diana.jamal@gmail.com
>
> ---
>
> **From:** Fadi El-Jardali
> **Sent:** Monday, October 03, 2016 9:30 AM
> **To:** Diana S. Jamal <dj06@aub.edu.lb>
> **Subject:** FW: Hi Dr. Fadi, , this is Fahad Alshammari (PhD Student) at Monash University, Australia
>
> Fadi El-Jardali, M.P.H., Ph.D.
> Professor
> Director – Knowledge to Policy (K2P) Center
> Co-Director – Center for Systematic Reviews in Health Policy and Systems Research (SPARK)
> Co-Director – WHO Collaborating Center for Evidence-Informed Policy and Practice
> Faculty of Health Sciences, Room 140A
> American University of Beirut
> Riad El Solh, Beirut 1107 2020
> Beirut, Lebanon
> Tel: +961-1-350000 ext. 4692
> Cell: +961-3-357775
>
> **From:** Fahad Alshammari [mailto:fahad.alshammari@monash.edu]
> **Sent:** Monday, October 03, 2016 5:27 AM
> **To:** Fadi El-Jardali

Appendix B: Health Professional survey (Questionnaire)

A. QUALITY OF CARE

In this section, you will evaluate your hospital's involvement in the improvement of customers' quality of care. Read the following sentences and circle the appropriate answer (1= strongly disagree, 5= strongly agree). When you answer these questions, you must think of your hospital at the present time and not how it was or how it will be.

Leadership

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Don't know
1. The emergency department (ED) provides highly visible leadership in maintaining an environment that supports quality improvement.	1	2	3	4	5	9
2. The ED is a primary driving force behind quality improvement efforts.	1	2	3	4	5	9
3. The ED allocates available departmental resources (e.g., finances, people, time, and equipment) to improving quality.	1	2	3	4	5	9
4. The ED consistently participates in activities to improve the quality of care and services	1	2	3	4	5	9
5. The ED has articulated a clear vision for improving the quality of care and services.	1	2	3	4	5	9
6. The ED has demonstrated an ability to manage the changes (e.g., organizational, technological) needed to improve the quality of care and services.	1	2	3	4	5	9
7. The ED has started to act on suggestions to improve the quality of care and services.	1	2	3	4	5	9
8. Based on the accreditation results, the ED has a thorough understanding of how to improve the quality of care and services.	1	2	3	4	5	9
9. The ED generates confidence that efforts to improve quality will succeed.	1	2	3	4	5	9

Strategic Quality Planning

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Don't know
1. ED staff are given adequate time to plan for and test quality improvements.	1	2	3	4	5	9
2. Each department and work group within this hospital maintains specific goals to improve quality.	1	2	3	4	5	9
3. The hospital's quality improvement goals are known throughout your department.	1	2	3	4	5	9
4. ED staff are involved in developing plans for improving quality.	1	2	3	4	5	9
5. Patients' expectations about quality play a key role in setting priorities for quality improvement.	1	2	3	4	5	9
6. ED staff play a key role in setting priorities for quality improvement through representation in the ED department organizational chart.	1	2	3	4	5	9

Human Resource Utilisation (training)

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Don't know
1. ED staff are given education and training in how to identify and act on quality improvement opportunities based on recommendations from accreditation surveys	1	2	3	4	5	9
2. ED staff are given continuous education and training in methods that support quality improvement.	1	2	3	4	5	9
3. ED staff are given the necessary education and training (through education programs) to improve job skills and performance.	1	2	3	4	5	9
4. ED staff are rewarded and recognized (e.g., financially and/or otherwise) for improving quality.	1	2	3	4	5	9
5. Inter-departmental cooperation to improve the quality of services is supported and encouraged.	1	2	3	4	5	9

Quality management

	Strongly disagree	disagree	Neither disagree nor agree	agree	Strongly agree	Don't know
1. The ED regularly checks equipment and supplies to make sure they meet quality requirements.	1	2	3	4	5	9
2. The ED has effective policies to support the improvement of the quality of care and services (example: Five Rights Principle in Drug Administration).	1	2	3	4	5	9
3. The services that the ED provides are thoroughly tested for quality before they are implemented.	1	2	3	4	5	9
4. The ED views quality assurance as a continuing search for ways to improve.	1	2	3	4	5	9
5. The ED encourages their staff to keep records of quality problems through documentation.	1	2	3	4	5	9

Quality results

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Don't know
1. Over the past few years, the ED has achieved steady, measurable improvements in the quality of consumer satisfaction.	1	2	3	4	5	9
2. Over the past few years, the ED has achieved steady, measurable improvements in the quality of care provided to patients.	1	2	3	4	5	9
3. Over the past few years, the ED has achieved steady, measurable improvements in the quality of services related to the triage system and waiting time provided by the department.	1	2	3	4	5	9
4. Over the past few years, the ED has maintained a high-quality health services despite financial constraints	1	2	3	4	5	9

Customer (Patient) satisfaction

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Don't know
1. The ED does a good job of assessing current patient needs and expectations.	1	2	3	4	5	9
2. The ED does a good job of assessing future patient needs and expectations.	1	2	3	4	5	9
3. ED staff promptly resolve patient complaints.	1	2	3	4	5	9
4. Patients' complaints are studied to identify patterns and learn from them to prevent the same problems from reoccurring.	1	2	3	4	5	9
5. The ED uses data from patients to improve services.	1	2	3	4	5	9
6. Data on patient satisfaction are widely communicated to ED staff.	1	2	3	4	5	9
7. The ED uses data on patient expectations and/or satisfaction when designing new services.	1	2	3	4	5	9

B. ACCREDITATION IMPACT

The goal of this section is to examine the impact of the accreditation in terms of bringing quality improvement practices to your hospital. For each of the following sentences, please circle the appropriate number.

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Don't know
1. During the preparation for the last survey, important changes were implemented at the ED.	1	2	3	4	5	9
2. You participated in the implementation of these changes.	1	2	3	4	5	9
3. You learned of the recommendations made to your ED since the last survey (if it's the case).	1	2	3	4	5	9
4. These recommendations were an opportunity to implement important changes at the ED.	1	2	3	4	5	9
5. You participated in the changes that resulted from accreditation recommendations.	1	2	3	4	5	9
6. Accreditation enables the improvement of patient care.	1	2	3	4	5	9
7. Accreditation enables the motivation of ED staff and encourages teamwork and collaboration.	1	2	3	4	5	9
8. Accreditation enables the development of values shared by all professionals at the ED.	1	2	3	4	5	9
9. Accreditation enables the ED to better respond to the population's needs.	1	2	3	4	5	9
10. Accreditation is a valuable tool for the ED to implement changes.	1	2	3	4	5	9
11. The ED's participation in accreditation enables it to be more responsive when changes are to be implemented.	1	2	3	4	5	9

C. INFORMATION ABOUT YOURSELF

Gender

( ) Female ( ) Male

Age

( ) Under 30 years ( ) Between 30 and 40 years
( ) Between 40 and 55 years ( ) Over 55

How long have you worked for or been associated in an emergency department?

/_____/ years /_____/ months

How long have you worked for or been associated in this emergency department?

/_____/ years /_____/ months

What is your highest educational credential?

( ) Diploma
( ) Bachelor Degree
( ) Postgraduate Diploma
( ) Master Degree
( ) PhD Degree
Other, specify: _____

What is your occupational category?

( ) Physician ( ) Quality Director ( ) Nurse ( ) Quality Coordinator

( ) Head Nurse ( ) Director of Emergency Department. Other, specify: _____

How do you judge your involvement into the accreditation process on a scale from 1 to 10?

/ 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10 /

Thank you for your collaboration.

Appendix C: Monash University Ethical Approval

Monash University Human Research Ethics Committee

Approval Certificate

This is to certify that the project below was considered by the Monash University Human Research Ethics Committee. The Committee was satisfied that the proposal meets the requirements of the *National Statement on Ethical Conduct in Human Research* and has granted approval.

Project Number: 1375
Project Title: Quality standards and emergency care: An evaluation of patient outcomes in public hospitals in Saudi Arabia.
Chief Investigator: Assoc Professor Virginia Plummer
Expiry Date: 10/05/2022

Terms of approval - failure to comply with the terms below is in breach of your approval and the *Australian Code for the Responsible Conduct of Research*.

1. The Chief Investigator is responsible for ensuring that permission letters are obtained, if relevant, before any data collection can occur at the specified organisation.
2. Approval is only valid whilst your hold a position at Monash University.
3. It is responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by MUHREC.
4. You should notify MUHREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
5. The Explanatory Statement must be on Monash letterhead and the Monash University complaints clause must include your project number.
6. Amendments to approved projects including changes to personnel must not commence without written approval from MHUREC.
7. Annual Report - continued approval of this project is dependent on the submission of an Annual Report.
8. Final Report - should be provided at the conclusion of the project. MUHREC should be notified if the project is discontinued before the expected completion date.
9. Monitoring - project may be subject to an audit or any other form of monitoring by MUHREC at any time.
10. Retention and storage of data - The Chief Investigator is responsible for the storage and retention of the original data pertaining to the project for a minimum period of five years.

Thank you for your assistance.

Professor Nip Thomson

Chair, MUHREC

CC: Ms Julia Morphet, Mr Fahad Alshammari

List of approved documents:

Document Type	File Name	Date	Version
Explanatory Statement	EXPLANATORY STATEMENT (for patient in English)	14/04/2017	1
Explanatory Statement	Explanatory Statement for Interview (Arabic)	14/04/2017	1
Explanatory Statement	EXPLANATORY STATEMENT (for Health Professionls)	14/04/2017	1
Consent Form	Consent Form (English)	14/04/2017	1
Consent Form	Consent Form (Arabic)	14/04/2017	1
Supporting Documentation	Interview Questions	14/04/2017	1
Questionnaires / Surveys	Survey	19/04/2017	1
Supporting Documentation	patient flyer in Arabic	19/04/2017	1
Supporting Documentation	Flyer for Health Professionals (E) V2	25/04/2017	2
Supporting Documentation	patient flyer in English V2	25/04/2017	2

Appendix D: Ethical approval from KFMC

Kingdom of Saudi Arabia
Ministry of Health
King Fahad Medical City
(162)

وزارة الصحة
مدينة الملك فهد الطبية
King Fahad Medical City

المملكة العربية السعودية
وزارة الصحة
مدينة الملك فهد الطبية
(١٦٢)

IRB Registration Number with KACST, KSA: H-01-R-012
IRB Registration Number with OHRP/NIH, USA: IRB00010471
Approval Number Federal Wide Assurance NIH, USA: FWA00018774

September 10, 2017
IRB Log Number: 17-306E
Department: External
Category of Approval: EXEMPT

Dear Mr. Fahad Al-Shammari,

I am pleased to inform you that your submission dated August 21, 2017 for the study titled '**Quality standards and emergency care: An evaluation of patient outcomes in public hospitals in Saudi Arabia**' was reviewed and was approved according to ICH GCP guidelines. Please note that this approval is from the research ethics perspective only. You will still need to get permission from the head of department or unit in KFMC or an external institution to commence data collection.

We wish you well as you proceed with the study and request you to keep the IRB informed of the progress on a regular basis, using the IRB log number shown above.

Please be advised that regulations require that you submit a progress report on your research every 6 months. You are also required to submit any manuscript resulting from this research for approval by IRB before submission to journals for publication.

As a researcher you are required to have current and valid certification on protection human research subjects that can be obtained by taking a short online course at the US NIH site or the Saudi NCBE site followed by a multiple choice test. Please submit your current and valid certificate for our records. Failure to submit this certificate shall a reason for suspension of your research project.

If you have any further questions feel free to contact me.

Sincerely yours,

Prof. Omar H. Kasule
Chairman, Institutional Review Board (IRB)
King Fahad Medical City, Riyadh, KSA
Tel: + 966 1 288 9999 Ext. 26913
E-mail: okasule@kfmc.med.sa

K F M C
Approved
10 SEP 2017
I R B

Appendix E: Explanatory statement for health professionals

EXPLANATORY STATEMENT

Survey for Health Professionals

Project: *Accreditation standards and emergency care: An evaluation of quality of care in accredited public hospitals in Saudi Arabia*

My name is Fahad Alshammari, PhD student of the Faculty of Medicine Nursing and Health Sciences at Monash University. I am undertaking a research project, as shown above, my contact details are as follows;

Mr. Fahad Alshammari
PhD student
Faculty of Medicine Nursing and Health Sciences
Peninsula Campus
Monash University, Australia
Telephone: +61 449980852
Telephone: +966 559972633
Email: fahad.alshammari@monash.edu

You are invited to take part in this study because you are a nurse or doctor working in the Emergency Department. Please read this Explanatory Statement in full before deciding whether to participate in this research. If you would like further information regarding any aspect of this project, you are encouraged to contact the researcher via the phone number or email address listed above.

What does the research involve?

The purpose of this study is to evaluate patient outcomes in emergency care in Saudi Arabian public hospitals. The results will be used to review the outcomes of emergency care in the accredited hospital by the national program (CBAHI) to enhance services for patients in the future.

Participating in this study will be through completing one survey. In section A, you will be asked to evaluate your hospital's involvement in the improvement of consumers' quality of care. In section B, you will be asked to evaluate the impact of the accreditation in terms of bringing quality improvement practices to your hospital. Time to complete the survey will be approximately 15 to 20 minutes. The participation in the survey is completely anonymous and you are not required to give any identification information about yourself.

Why you are chosen for this research?

You have been invited to participate in this study because you are directly involved in providing health care in the emergency department. I highly recommend your participation as your input will provide us with a better understanding of the impact of accreditation on quality of care.

Consenting to participate in the project and withdrawing from the research

Participation in this study is voluntary, and you therefore retain the right to abstain from responding. However, if you do consent, you may withdraw from further participation at any time before or during the survey. Moreover, you can refuse to answer any questions, which you feel are too personal or intrusive.

Possible benefits and risks to participants

Your input will assist executives to improve the accreditation program to make it more effective in ensuring quality of patient outcomes in emergency department.

Payment

There is no payment will be giving to participants.

Confidentiality

All aspects of the study, including results, will be strictly confidential and only the researchers will have access to the information provided by participants. Information collected from each participant will be de-identified, and any further use of these findings in publications or conference presentations will be of a general nature, not attributable to an individual.

Storage of data

The information collected will be non-identifiable and will be used by the researcher for the sole purpose of this project. Any electronic data will be kept on a password-protected computer in the researcher's office at Monash University and hard copies of the consent forms will be kept on University premises in a locked filing cabinet.

All the data collected in this research will be kept for a minimum of five years, after which it will be disposed of by deleting relevant computer files, and destroying or shredding hardcopy materials.

Results

Results from this study will be published in journal articles and reported in a PhD thesis.
If you would like to be informed of the aggregate research finding, please contact: Mr. Fahad Alshammari as shown above.

Complaints

Should you have any concerns or complaints about the conduct of the project, you are welcome to contact the Executive Officer, Monash University Human Research Ethics (MUHREC):

Executive Officer
Monash University Human Research Ethics Committee
(MUHREC)
Room 111, Chancellery Building E,
24 Sports Walk, Clayton Campus
Research Office
Monash University VIC 3800Tel: +61 3 9905 2052 Email:
muhrec@monash.edu Fax:+61 3 9905 3831

Thank you, Fahad Alshammari

Appendix F: Explanatory statement for ED patients

EXPLANATORY STATEMENT

Semi-structured interview for Patients

Project: *Accreditation standards and emergency care: An evaluation of quality of care in accredited public hospitals in Saudi Arabia*

My name is Fahad Alshammari, PhD student of the Faculty of Medicine Nursing and Health Sciences at Monash University. I am undertaking a research project, as shown above, my contact details are as follows;

Mr. Fahad Alshammari
PhD student
Faculty of Medicine Nursing and Health Sciences
Peninsula Campus
Monash University, Australia
Telephone: +61 449980852
Telephone: (Saudi Arabia) +966 559972633
Email: fahad.alshammari@monash.edu

You are invited to take part in this study. Please read this Explanatory Statement in full before deciding whether or not to participate in this research. If you would like further information regarding any aspect of this project, you are encouraged to contact the researchers via the phone numbers or email addresses listed.

What does the research involve?

The purpose of this study is to evaluate patient outcomes in emergency care in accredited Saudi Arabia public hospitals. The results will be used to enhance the quality of emergency services for patients in the future.

You will be requested to participate in an interview to describe your care experiences in the emergency department. Questions will explore emergency department quality of care.

The interview will be conducted either on the telephone or in the ward after transfer from ED and will last between 30 to 40 minutes. If you agree, it will be recorded through audio- tape-recorder.

Why you are chosen for this research?

You have been invited because you are directly involved by receiving the emergency care in this hospital.

Consenting to participate in the project and withdrawing from the research

Participation in this study is voluntary and you are under no obligation to consent to participate. However, if you do consent, you may withdraw from further participation at any time before or during the interview. Moreover, you can refuse to answer any questions, which you feel are too personal or intrusive.

Possible benefits and risks to participants

You may not directly benefit from participating in this study, but the information you provide us will contribute new knowledge to the limited literature on health services accreditation in Saudi Arabia. It will provide insights between sustainable quality outcomes for emergency care and accreditation. It will leads to possible understanding of patient perspectives towards quality of care. If you feel unhappy about what is being discussed, the interview will cease immediately at your request. The researcher will ask if you would like support from another person or health professional before leaving/hanging up.

Payment

There is no payment provided to participants.

Confidentiality

All aspects of the study, including results, will be strictly confidential and only the researchers will have access to the information provided by participants. Information collected from each participant will be de-identified, and any further use of these findings in publications or conference presentations will be of a general nature, not attributable to an individual.

Storage of data

The information collected will be non-identifiable and will be used by the researcher for the sole purpose of this project. Any electronic data will be kept on a password-protected computer in the researcher's office at Monash University, Australia and hard copies of the consent forms will be kept on University premises in a locked filing cabinet.

All the data collected in this research will be kept for a minimum of five years, after which it will be disposed of by deleting relevant computer files, and destroying or shredding hardcopy materials.

Results

Results from this study will be published in journal articles and reported in a PhD thesis.
If you would like to be informed of the aggregate research finding, please contact: Mr. Fahad Alshammari as shown above.

Complaints

Should you have any concerns or complaints about the conduct of the project, you are welcome to contact the Executive Officer, Monash University Human Research Ethics (MUHREC). Also, contact details of a Saudi consultant are available here to take your complaint:

Executive Officer
Monash University Human Research Ethics
Committee (MUHREC)
Room 111, Chancellery Building E,
24 Sports Walk, Clayton Campus
Research Office
Monash University VIC 3800
Tel: +61 3 9905 2052, Fax:+61 3 9905 3831
Email: muhrec@monash.edu

Thank you, Fahad Alshammari

Appendix G: Consent for patient's interview

CONSENT FORM

Semi-structured interview for Patients

Project: *Accreditation standards and emergency care: An evaluation of quality of care in accredited public hospitals in Saudi Arabia*

Student Researcher:

Mr. Fahad Saud Alshammari
PhD student
School of Nursing and Midwifery
Peninsula Campus
Monash University, Australia
Telephone: (Australia) +61 449980852
Mobile: (Saudi Arabia) +966559972633
Email: fahad.alshammari@monash.edu

I have been asked to take part in the Monash University research project specified above. I have read and understood the Explanatory Statement and I hereby consent to participate in this project.

I consent to the following:	Yes	No
Audio recording during the interview	☐	☐
Written notes during the interview	☐	☐

Name of Participant _____

Participant Signature _____

Appendix H : Table 6.2 Primary Theme 1: Context; Sub-theme 1.1: Reasons for Visit

Patient	Manifestation		Unit of Information
BM1	1	Stomach pain	*"I had a severe stomach ache and bowel obstruction, and this has happened before, so I was aware of it."*
BM2	1	Stomach pain	*"I came because I have a condition and they say at the Takhasusi (specialist) hospital these are the best doctors. I have had a stomach ache for a long time and it is severe."*
HF1	1	Stomach pain	*"I have had a severe pain in my lower belly for six hours."*
RF1	2	Stroke	*"I came to accompany my mother. She was tired. Low blood pressure, and she could not move. About a month ago, she had the exact same symptoms, so we knew what it was. This is what happened the first visit. They refused to admit her, but she ended up having a stroke."*
UF1	2	Stroke	*"She cannot move because of her previous cases of stroke."*
UM1	3	Chest pain	*'I came here because I have had a pain in my chest for four days."*
HM1	4	Heart problem	*"I have tachycardia, palpitation and irregular heartbeats. I have a heart problem and this is the first time I knew about it. I had palpitations and it was unusual, so I came to the ED."*
BM3	5	Kidney stone	*"I came because I needed too. I have severe pain in my left kidney. It's a kidney stone."*
HM2	6	Diabetes	*"I have high blood sugar and I came for this reason... high diabetes."*
HM3	7	Cancer	*"I came because I am a cancer (Lymphoma) patient.*
RM1	8	Hypertension. Diabetes. Alzheimer's	*"Three years ago, he was diagnosed with Alzheimer's". "They checked his case and found he had high blood pressure and diabetes."*

Appendix I: Table 6.4. Primary Theme 2: Quality of Care; Sub-theme 2.1: Good Quality of Care

Patient		Manifestation	Quotation (Unit of information)
BM1	1	Good communication	*"Communication from doctors and nurses was excellent".*
BM2	1	Good communication	*"They checked my vital signs, and then took me to the doctor and he did an ECG and told me that I have atrial fibrillation. They kept me informed of all the assessments and the results of the tests".*
HF1	1	Good communication	*"There was good communication".*
HM2	1	Good communication	*"They informed me about the assessment and treatment."*
HM1	1	Good communication	*"The communication was good with nurses. They listened to me and listened to my medical complaints and did some primary tests...before I met the doctor".*
HM3	1	Good communication	*"I have to mention Dr. X from the Haematology Department. She cares about her patients even when they are at home. She contacted me on her mobile phone to ask about everything, my medical condition and whether I have improved or not. Actually, I told her before I came to the ED that I have narrowing in breathing and because of this complaint she went there before my arrival at the ED. She respects her patients and informs them about all the medical procedures and their rights".*
RM1	1	Good communication	*"There was a Saudi female nurse and honestly, she was standing by us all the time from the beginning. She answered our questions and informed us about what was there if it is in another language. She helped us to calm down...That Saudi sister (nurse) was great".*
UM1	1	Good communication	*"Very, very good. Attitude and smiling. Was excellent. The physician came to me and told me about the assessment and the condition, and that the CT doesn't show much and recommended that I take a breathing test because I might be suffering from asthma."*
UF1	1	Good communication	*Communication was good; the doctor was Saudi. I understand him; He respected me and the patient. He smiled a lot...Beautiful attitude and words. This is something missing usually at hospitals. It was great with no exaggerations."*

BM2	2	Short waiting time	*"Very high quality. They received my case and from the beginning they saw my eyes and knew that I was in pain, they took fast action with the assessment."*
BM2	2	Short waiting time	*"It was an excellent experience with immediate medical intervention."*
HF1	2	Short waiting time	*"The service was very good and there was care and immediate attendance to my case. Regarding adults, it is rare to experience a long wait except in winter sometimes."*
HM1	2	Short waiting time	*"They received an accident and the entire staff was busy with the injured patients and I fully understand that injured patients need medical services more urgently than me. But today I was attended in 10 minutes which is good."*
HM3	2	Short waiting time	*"When I reached the door of the ED, I saw Dr. X. She met me and although it is not a working day, she assessed my case, immediately gave me tablets and admitted me. It was an immediate and good quality of care. Not even half an hour. It was fast service because of Dr. X, and all the staff were responsive to my case. The good thing is that they received me in ED in a proper time, they were waiting for me".*
RF1	2	Short waiting time	*"I think all was punctual, responses, attendance, and everything".*
UM1	2	Short waiting time	*"I felt that the waiting time was not long. It was an acceptable waiting experience that time."*
UF1	2	Short waiting time	*"It was only the time for the regular routine. 10-15 minutes. We went through basic check-ups, and the doctor came, and we went through some paperwork. There is no long waiting time to mention. They checked her breathing and blood pressure etc....in no time we're in for admission".*
HF1	3	Language	*"The doctor was an Arab, so he spoke Arabic to me."*
BM2	3	Language	*"They spoke Arabic to me."*
HM2	3	Language	*"They get help from other doctors or nurses if they need help with language."*
HM3	3	Language	*"It's ok since I speak English, so we are good and act like a family."*
RF1	3	Language	*"Health professionals were all Arabs and the language was clear".*
RM1	3	Language	*"I understand the language and I really don't care for the others. The Saudis communicate with us in our everyday language."*
UF1	3	Language	*"Everything was clear, and when they needed to say something in English they waited until a translator came."*

HF1	4	Good staff	*"The care that was provided by the doctors and nurses was very good. They treated me with respect."*
HM2	4	Good staff	*"The health professional staff were good and showed care and compassion and smiled at the patients and these things should be praised."*
HM3	4	Good staff	*"Everyone was excellent at the ED, the nurses and everyone. All the nurses are outstanding, Indians and Filipinos".*
UF1	4	Good staff	*"They really did great job. We feel comfortable because of them. Bless them."*
RF1	4	Good staff	*"The care by the nurses was good".*
BM1	5	Triage	*"The triage was good and the doctor (the resident) was present all the time in the treatment and examination rooms."*
HM1	5	Triage	*"In general, the quality was good. I was received by the nurses at the triage. Then, they checked my vital signs and directed me to see the doctor in-charge of the ED. The doctor ordered an ECG and checked my blood pressure and breathing, and then they called a cardiology specialist".*
HM1	5	Triage	*"The triage can separate and code each case according to its severity. It all about priority."*
RF1	6	Good facilities	*"Good privacy: the curtains and equipment.*

Appendix J: Table 6.5 Primary Theme 2: Quality of Care; Sub-theme 2.1: Poor Quality of Care

Patient	Manifestation		Unit of information
BM1	1	Long waiting time	*"The waiting time was high, I came at 11 am and I was admitted at 2 am after midnight."*
BM1	1	Long waiting time	*"It was not good. Even the nurses took a long time to attend to my case, the doctors came in two hours maybe."*
BM2		Long waiting time	*"I have been to the ED more than once and waited for more than 12 hours to be admitted."*
BM3	1	Long waiting time	*"I came to the ED at 6 am and I was not aware of my condition until the afternoon."*
BM3	1	Long waiting time	*"I was left unattended on the bed for about four hours until I was seen by the specialist."*
HF1	1	Long waiting time	*"The doctor was a little late".*
HF1	1	Long waiting time	*"There are seasons of viruses which make the waiting time at the ED long, especially for children. At night, there is long wait especially for children".*
HM2	1	Long waiting time	*"During weekends and at night, s or what we call off work hours, the waiting time is usually high... because medical clinics like primary health care centres are all closed, so the entire city reaches the ED."*
RF1	1	Long waiting time	*"About three hours. It was a bit of a long waiting time."*
RM1	1	Long waiting time	*"It was maybe an hour and a half until we were seen by the doctor who directed that I should be admitted. I think it was long time. The doctor should not have come late. I don't know if they were late calling him or he was late himself, or if he was busy with other cases. I cannot tell."*
BM3	3	Poor communication	*"Their communication was not good in general, they either did not inform me of my assessment results or they were late in telling me about that. There was an error in communication but I don't know in which part of the whole process."*
HM2	3	Poor communication	*"When someone comes to the ED, you don't communicate with the doctor like you do at the clinic because of the pressure in the ED. The number of patients means the health professional attending my case is not able to have good communication. You do not feel comfortable enough to ask questions."*
RF1	3	Poor communication	*"No, the communication was not as good as I expect, we have not signed any documents."*
HM3	4	Poor staff	*"Some Saudi nurses are not be as good as the other non-Saudi nurses".*

RF1	4	Poor staff	*"The Egyptian doctor at that time was dealing with patient care negatively, he had a negative attitude. We waited until his shift was over and they approved her admission. The other doctor presented her condition to a specialist and he admitted her... we decided to file an official compliant."*
UM1	4	Poor staff	*"Any work must have three things: facility, equipment, and human power. The building is here, and the equipment is up to date, but there is not enough human power as yet."*
BM3	4	Poor staff	*"To those who sent me away when I was really ill, an absolute failure."*
UF1	4	Poor staff	*"They really did a great job. We feel comfortable because of them. Bless them."*
RF1	5	Poor facilities	*"There is no place for the patients' company to sit. We were standing the entire time."*
RM1	5	Poor facilities	*"They put us in the male observation room and it looked like a storage room with all the stuff stored there. There were electricians working and the environment was not pleasing with our patient in that room...The place was not ready."*
RM1	6	Poor treatment	*"Two doctors came and chatted in English and decided to insert a nasogastric tube, but we refused. He is too old to do so, and there must be some other options. It should not be either this or you die. The doctor told us that he suffers from weakness in the kidney functions and dehydration because he doesn't eat or drink. We have known all these things for 13 years."*
UM1	6	Poor treatment	*"They took me with the IV-line attached to my hand to have a CT. The Saudi technician told me that I should be careful when I put on my clothes afterwards. He was right, because I hit my hand , and I bled and the whole scene was not pleasant. I really wish they had directed me to do so before I went to the CT."*