THE RELATIONSHIP BETWEEN TRANSFORMATIONAL LEADERSHIP, HIGH PERFORMANCE WORK SYSTEM, ORGANIZATIONAL CLIMATE, AND PATIENT SAFETY IN SAUDI PUBLIC HOSPITALS

ALOTAIBI, EQAB AIYADH

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ALOTAIBI, EQAB AIYADH

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ABSTRACT

This study examined the determinants of patient safety in public hospitals in Saudi Arabia. Specifically, it aimed to investigate the effect of transformational leadership, high performance work system (HPWS), and effective reporting system on patient safety. This study also explored the mediating effect of organizational climate on the relationship between HPWS and patient safety. The motivation of this study was driven by lack of studies and inconsistent findings in the previous literature regarding the relationship between HPWS and patient safety. To achieve this purpose, this study integrated different theories such as Donabedian theory (SPO), HROT theory, and transformational leadership theory to study the interaction between process and outcomes. The study utilized a survey questionnaire which was distributed to a sample of 182 public hospitals at 20 health regions in Saudi Arabia. PLS-SEM technique was used to analyze the direct and indirect relationships between the variables in this study. Result of this study found that transformational leadership had positively significant effect on HPWS and effective reporting system. In addition, the result found that effective reporting system had significant effect on the frequency of occurrence of negative errors that may threaten patient safety. This study also revealed that the level of organizational climate mediated the relationship between HPWS and overall perception of patient safety. The findings of this study suggest that managers and policy makers should emphasize developing transformational leadership style and ensuring the use of HPWS as an important organizational strategy to improve patient safety. Finally, theoretical implications and recommendations for future research are highlighted and discussed.

Keywords: patient safety, transformational leadership, high performance work system, effective reporting system, organizational climate

ABSTRAK

Kajian ini menyelidiki penentu kepada keselamatan pesakit di hospital awam di negara Arab Saudi. Secara khususnya, ia bertujuan menyiasat kesan kepemimpinan transformasional, sistem kerja berprestasi tinggi (SKBT), dan sistem pelaporan berkesan terhadap keselamatan pesakit. Kajian ini meneroka kesan pengantaraan iklim organisasi terhadap hubungan antara SKBT dan keselamatan pesakit. Motivasi kajian ini tercetus daripada kekurangan kajian dan ketidaktekalan dapatan di karya lalu dari aspek hubung kait antara SKBT dan keselamatan pesakit. Akibat kekurangan kajian dan ketidaktekalan keputusan, terdapat cadangan untuk menyelidik kesan pemboleh ubah lain yang boleh menjelaskan hubung kait berkenaan. Untuk mencapai tujuan ini, kajian ini menyepadukan pelbagai teori seperti teori Donabedian (SPO), dan teori kepemimpinan transformasi untuk mengkaji (HROT) interaksi proses dan hasil. Dalam kajian ini, soal selidik telah diagihkan kepada sampel yang terdiri daripada 182 hospital awam di 20 kawasan kesihatan di Arab Saudi. Teknik PLS-SEM digunakan untuk menganalisis hubungan langsung dan tidak langsung antara pemboleh ubah-pemboleh ubah kajian. Keputusan kajian ini mendapati bahawa kepemimpinan transformasional mempunyai kesan positif dan signifikan terhadap SKBT dan sistem pelaporan berkesan. Tambahan lagi, keputusan mendapati bahawa sistem pelaporan berkesan mempunyai kesan negatif yang signifikan terhadap kekerapan berlakunya kesilapan negatif yang boleh mengancam keselamatan pesakit. Kajian ini mendedahkan bahawa tahap iklim organisasi mengantara hubungan antara SKBT dan persepsi keseluruhan keselamatan pesakit. Dapatan kajian ini mencadangkan agar pengurus dan pembuat dasar memberikan penekanan terhadap keperluan membangunkan gaya kepemimpinan transformasional dan memastikan penggunaan SKBT di organisasi penjagaan kesihatan sebagai satu strategi penting untuk menambah baik keselamatan pesakit. Akhir sekali, implikasi teoritikal dan cadangan masa hadapan diketengahkan dan dibincangkan.

Kata kunci: keselamatan pesakit, kepemimpinan transformasional, sistem kerja berprestasi tinggi, sistem pelaporan berkesan, iklim organisasi

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LIST OF ABBREVIATIONS

AHRQ	The Agency for Health Care Research and Quality
AMA	The American Medical Association's
AVE	Average Variance Extracted
CFA	Confirmatory Factor Analysis
CR	Composite Reliability
EFA	Exploratory factor analysis
GCC	The Gulf Cooperative Council
GoF	Goodness of Fit
HCUP	The Health care Cost and Utilization Project
HPWS	High Performance Work System
HRM	Human Resource Management
IOM	The Institute of Medicine
JCAHO	The Joint Commission on Accreditation of Health care Organizations'
KSA	The Kingdom of Saudi Arabia
KSAs	Knowledge, Skills and Abilities
MLQ	The Multifactor Leadership Questionnaire
MOH	The Ministry of Health
NHS	The national health system
PLS	Partial Least Squares
PSI	Patient Safety Indicators
SEM	Structural Equation Modeling

SPO	Stracture, Process, Outcome
SPSS	Statistical Package for Social Sciences
TFL	Transformational Leadership
UAE	The United Arab Emirates
VAF	Variance Accounted For
WHO	The World Health Organization

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Patient safety has become a significant topic among health professionals, policy makers, and the public owing to the emphasis on the reported and unreported healthcare errors that result in negative situations. Several initiatives and studies dedicated to patient safety have been conducted in the Western countries that are characterized by well-organized healthcare systems and effectively implemented quality assurance programs (Al Rifai, 2008). In contrast, developing countries lack the infrastructure required for the implementation and lack resources to tackle patient safety. On the basis of the report of the World Health Organization (WHO, 2004), deficiencies in healthcare systems in terms of infrastructure, lack of skilled personnel and other quality issues are still prevalent in the developing countries.

In the context of Saudi Arabia, the Kingdom has been a member of the Gulf Cooperative Council (GCC) along with Bahrain, Kuwait, Oman, Qatar and the United Arab Emirates (UAE). In comparison to several developing countries, Saudi Arabia has managed to create an extensive healthcare system in a short span of years. In addition, the overall health and social status of the kingdom of Saudi Arabia (KSA) population has significantly improved and is favorably compared to its GCC countries counterparts (WHO, 2006).

In Saudi Arabia, in response to the low level of patient safety and increase public and media pressure, Ministry of Health (MOH) has been actively pursuing efforts to improve quality and safety of healthcare services. Several initiatives have been implemented to improve safety (Al-Ahmadi, 2010). One of the positive elements that the Ministry of Health seeks to focus on is the quality assurance programs to enhance the provision of health services standards (Ministry of Health, 2005).

MOH has also extended their focus to the development of human resource in healthcare specifically, in the nursing sector (Al-Husseini, 2006). The primary reason behind these developments, specifically in the nursing area lies in the fact that nurses are the backbone of healthcare delivery as they are the ones who deal face-to-face with patients (Al-Husseini, 2006; Ida *et al*., 2009).

Ida *et al*. (2009) contended that nurses are the main healthcare service providers, providing 24 hour services on the front line, face-to-face with patients and they are the primary fronts of the hospital operations. Previous researchers have focused on the majority of nurses, physicians and administrators who are convinced that the nursing staff is primarily responsible for ensuring patient safety (Cook, Hoas, Guttmannova, and Joyner, 2004).

Regardless of the Saudi government's efforts in developing and improving the healthcare sector, there is particularly a growing concern about patient safety in Saudi Arabia's public health sector (Al-Husseini, 2006; Al-Osimy, 2008). It was perceived that the

quality of MOH services is much less than those provided by private sector or other governmental healthcare providers (Walston *et al*., 2008).

Patient safety is comprised of indicators including various items in literature and among the top of them are patient mortality, failure-to-rescue (Aiken, Clarke, Sloane, Sochalski & Silber, 2002: Aiken, Clarke, Cheung, Sloane, & Silber, 2003), pneumonia, pressure ulcers (Cho, Ketefian, Barkauskas & Smith, 2003), erroneous medication, patients' accidental falls, and infections (Penoyer, 2010).

In an attempt to describe the potential factors affecting patient safety, it was stated that adverse events do not occur intentionally from people to hurt patients but they are attributed from the complex healthcare systems which influences the performance of the individuals (WHO, 2009). The ability of the employees to perform hinges upon a set of combined factors in a way that possessing greater abilities, being highly motivated and steering clear of external disruptions negatively impacting the employees work eventually results in better performance (Spaulding, 2011).

Consequently, policy makers in healthcare increasingly recognize that a well-motivated, appropriately skilled and deployed workforce is crucial for success of health system delivery (Buchan, 2004), managing this workforce by means of human resource management (HRM) can be seen as an important key to success in hospitals. With the recent advances in human resource management, high performance work system (HPWS), which was introduced in the last few decades, is viewed as the use of mutually reinforcing HRM practices in a systematic way which stresses on the selection of suitable

employees, development of their skills, organizing work so that employees have the discretion to solve problems creatively, and the use of reward systems which motivate employees to work effectively in pursuit of organizational goals (Harley, Allen & Sargent, 2007). In the same line, it is argued that the components of HPWS need leaders who are able to convey its concepts and strategies (Kirkman, Lowe, & Young, 1998). Improving these relationships will impact in the performance of HPWS and, finally support high organizational outcomes. Therefore, a fruitful extension of the research area on HWPS would be to continue investigating the presence of the relationship between the supported HPWS from top managers and their transformational leadership exerted.

Enhancing patient safety hinges on an authentic disclosure of medical errors that threaten it. This disclosure allows organizations to benefit from prior experiences and carry out effective modifications to minimize medical errors. Furthermore, reporting system accountability calls for the obligatory reporting to external organization, but the challenge lies in the various reporting systems (Stow, 2006). From the many healthcare providers, nurses are deemed to be the primary players in reporting practice of erroneous events because they spend a considerable amount of time in direct contact with patients are more likely to notice these events. Therefore, organizations should create a climate that will enhance the error reporting. Hence, if the organizational climate is characterized as non-punitive, the system of reporting is expected to run efficiently (Clarke & Donaldson, 2008).

Ultimately, patient safety is viewed as the principal goal of every health care organization. Establishing a safer health care system needs conduction of researches that

identify system factors which contribute to patient safety (Al-Saleh & Ramadan, 2012). This claim arises from the fact that the health care services are provided to patients in a complex environment with interactions among many factors, such as the clinical condition of the patient, health care providers, resources and technology in addition to policies and procedures (Zapf & Reason, 1994). When these complex factors interact, unanticipated harmful outcomes could occur (errors); these errors which reflect human cognitive activity lead to adverse consequences and harm to the patients (Reason, 2000; Mick, Wood, & Massey, 2007).

1.2 Problem Statement

Patient safety has become foremost critical issue in the last decade either in the developed countries or in the developing countries (Nygren *et al*., 2013). In *To Err Is Human* (Kohn *et al*., 2000), the Institute of Medicine (IOM) report emphasizes that patient safety is "the avoidance, prevention and amelioration of adverse outcomes or injuries stemming from the process of health care" (p. 57). Despite of the growing global concern about patient safety accompanied by the recent advances in medical technologies and several researches' conceptualization of patient safety, the reports and statistics about patient safety are scarce even in developed countries (Shojania, Duncan, McDonald, Wachter, & Markowitz, 2001). The review of these scarce available statistics clearly points to critical level of patient safety worldwide, for example, the statistics published by the Committee on Quality of Health Care in America and Institute of Medicine (2000) revealed that the annual total deaths due to preventable medical errors in USA were estimated to exceed 44,000 patients. In light of this and other similar alarming statistics from other institutes

(Jao & Hier, 2010), it was ascertained that medical errors not only threaten the quality of healthcare and increase healthcare costs, but it also adds to the medical malpractice crisis (Studdert *et al*., 2005).

Also, the reports from USA addressed that approximately 1.16 million patient safety incidents occurred among 40 million hospitalizations for the Medicare population making an incident rate of about three-percent. These incidents added an extra cost of $8.6 billion from 2003 to 2005. Additionally, these incidents contributed to 247,662 deaths (Jao & Hier, 2010). Moreover, the estimated annual mortalities from medical errors exceeded deaths in U.S. hospitals from highway accidents, breast cancer, and AIDS combined (SoRelle, 2000).

Furthermore, beyond the loss of human lives, preventable medical errors have a costly impact in term of losing the patients' trust in the healthcare provided to them and causing dissatisfaction among both physicians and patients. The total estimated cost of preventable medical errors after addition of indirect costs for example lost income, household productivity and disability, is between $17 billion and $29 billion annually (Committee on Quality of Health Care in America & Institute of Medicine, 2000). Therefore, WHO in 2002 agreed on a World Health Assembly resolution on patient safety because they recognized the substantial need to reduce the harm and suffering of patients and their families as well as the compelling evidence in favor of the economic benefits of improving patient safety (WHO, 2009).

At a global level, the WHO estimated that the additional hospitalization, litigation costs, infections acquired in hospitals, lost income, disability and medical expenses have cost some countries between US$ 6 billion and US$ 29 billion a year (World Health Organization, 2009).

Regionally, in the Eastern Mediterranean countries, the situation is even worse. In a study conducted to measure harmful incidents in hospitals, the World Health Organization reported that unsafe care is responsible for enormous human toll, as it was estimated that approximately 8% of hospital admissions showed at least one adverse event that caused harm to patients. Of these, the majority were judged to be preventable and about 30% were associated with the death of patients (World Health Organization, 2012). Moreover, the actual number of medical errors might considerably exceed the reported ones, especially if we put into consideration that 95% of medication errors are not reported because of nurses' fear of punishment (Parshuram *et al*., 2008).

A closer focus on the problem of patient safety in Saudi Arabia, an earlier statement from the Ministry of Health stated that the number of medical errors in Saudi Arabia has reached more than 25,000 in five years which is considered as an alarming level (Gulf / Saudi Arabia, 2012). The Saudi Minister of Health pointed out that the phenomenon of medical errors is a global issue and the Kingdom is not an exception. He ascertained that there is public concern about it, and that the Ministry is working deliberately to sharply reduce these medical errors (Arab News, 2012).

In Jeddah, the main seaport of the Kingdom of Saudi Arabia, it had been posted recently that the costs of medical errors in terms of compensation to the patients in the first quarter of 2012 accounted for 1.4 million SR (about 350,000 USD), and the errors were mainly attributed to faults of nursing practices (Al Harby, 2012). Based on the above discussions which provide clear evidence about alarming situation of patient safety either at global, regional or local level, it was proposed to put this issue under concern.

Numerous researchers have measured patient safety using hospital records (Aiken, Clarke, Sloane, Sochalski, & Silber, 2002; Aiken, Clarke, Cheung, Sloane, & Silber, 2003); although record-based measurement can generate a complete list of health-threatening events, not all health-threatening events are reported (Potylycki *et al*., 2006). Barriers to reporting include fear, the desire to save face (Chiang & Pepper, 2006) and fear of punishment (Kanse, van der Schaaf, Vrijland, & van, 2006). Therefore, Hughes and Lapane (2006) asserted that regardless of the differences initiated from variation in demographic characteristics, perception of nurses about patient safety still represent important tool for measuring patient safety. In this context, as nurses are considered the key role in improving patient safety as they are working 24/7 on patients, their perception about patient safety should be put into consideration in studies related to measurement of patient safety (Durbin, Hansen, Sinkowitz-Cochran, & Cardo, 2006; Ginsburg *et al*., 2009). Moreover, Nurse's managers are responsible to carry out duties in various healthcare organizational levels. These levels include first-line patient care management at the unit level, middle management at the level of departments and top management at the level of executives (Roussel, 2006). Thus, current research will expand the boundary

of knowledge on the patient safety studies by empirically testing its dimensions by adding the nurse manager's perceptions regarding patient safety to the measurements of the overall measurement of patient safety.

In addition, subjective and anonymous evaluation may encourage healthcare professionals to report fully the frequency of occurrence of adverse events (Laschinger & Leiter, 2006; Teng, *et al*., 2009) adopted the subjective evaluation approach and demonstrated its reliability and validity in measurement. Thus, current research will followed (Laschinger & Leiter, 2006; Teng, *et al*., 2009) by using subjective measurement of patient safety.

The maintenance of patient safety during patient care is of great significance, most of the errors occur in hospital medication are preventable (Bates, *et al*., 1995). Improving outcomes of such hospital process are impacted by technology, standardization, a safety culture and increased healthcare profession empowerment (Al-Saleh & Ramadan, 2012).

Recently, through systematic review study, it has been cited that "to date there is no evidence-based and standardized list of contributory factors that can be used as a basis for understanding causation of incident errors based on organizational factors' background, and without studying this association thoroughly, reactive systems are unlikely to provide the answers we are looking for" (Lawton *et al*., 2012, p 3).

In addition, the IOM framework (2004), suggested that management practices is one of the four production components that could probably threaten patient safety. The framework provides that five management practices are significant to the implementation

of change and to the achievement of patient safety. They are balancing production efficiency and safety, creating and maintaining trust, managing effective change, involving employees in decision making and making use of knowledge management practices to develop a learning organization.

Consistently, High performance work system (HPWS) which is an advanced form of HR (Behrens, 2008) emphasize on utilizing a system of management practices that provide employees with skills, information, motivation, and latitude, resulting in a work force that becomes a source of competitive advantage (Guthrie, Spell, & Nyamori, 2002) and empower employees to act effectively towards achieving organizational benefits (Becker, Huselid, 1998; Delery & Shaw, 2001; Batt, 2002; Boxall & Purcell, 2002; Lepak *et al*., 2006).

Although multiple meta-analysis confirmed a relationship between HPWS and performance in the manufacturing sector (Combs, Liu, Hall, & Ketchen, 2006; Leggat, Bartram, & Stanton, 2011), but there is lack of study in the health fields (Schmidt & Veld, 2012). As suggested by West, Guthrie, Dawson, Borrill and Carter (2006) who addressed that policy makers should focus on HPWS as a substantial factor linked to patient safety. Therefore, HPWS should be investigated thoroughly to understand potentials of patient safety. Moreover, Chuang *et al*., (2011), after revealing the lack of evidence about HPWS in general and which of its bundles in specific are more effective in the outcome of health organizations, they came to the conclusion that these findings provide substantial impetus for conducting researches in this area (Chuang *et al*., 2011). Whereas, most of HPWS previous studies conducted in manufacturing sector and in

western countries and there is dearth of evidence from developing countries. Thus, current study is going to examine the relationship between HPWS and patient safety. Current study consider to be one of the few study which investigate HPWS in the public health sector in developing countries which expects to add new evidence to the body of knowledge regarding the effects of the management practices in terms of HPWS on patient safety.

Based on the reviewed literature, there were some scholars who called for necessity to examine the different mediating factors between HPWS and organizational performance which are closely related to outcome (Combs, Liu, Hall Ketchen, 2006). In the same context, Kohn, Corrigan and Donaldson (2000) and Hofmann and Mark (2006) pointed out to the importance of conducting future theoretical and empirical researches on patient safety on a larger focus involving factors under organizational system e.g. HPWS and organizational climate.

In addition, HPWS practices play a significant role in the creation of employee climate perceptions concerning their work environment (Gelade & Ivery, 2003; Rogg, Schmidt, Schull & Schmitt, 2001; Zacharos *et al*., 2005). Consequently, organizational climate has been contended to be a significant link between HPWS and employee performance (Ferris *et al*., 1998; Kopelman, Brief, & Guzzo, 1990; Ostroff & Bowen, 2000). Moreover, regarding the role of organizational climate on health outcome, Gershon *et al*., (2007) reported that while evidence for the association between organizational climate constructs and health outcome was detected, the relationship was limited as well. Therefore, according to the mediation model of Baron and Kenny (1986), organizational

climate may be said to function as mediator and represents the mechanism through which HPWS is able to influence patient safety. Thus, current study attempt to achieve its objective to examine the mediating effect of organization climate on the relationship between high performances works system and patient safety.

The implementation of high performance work system call for a committed and transformation leadership aiming to achieve collective goals (Chuang, Dill, Morgan, & Konrad, 2012; IOM, 2004; Page, 2004). Therefore, this study will examine the antecedent effects of transformational leadership on HPWS. Various reasons are attributed to the appropriateness of transformational leadership as a leadership model due to its significant to a high-performance work system in improving patient safety. This viewpoint showed the importance of having effective leaders who will employ management practices and develop a positive work environment to improve patient safety (Al-Rifai, 2008).

On the other hand, reporting of medical error is an essential requirement of patient safety (Hosford, 2007). Effective reporting system forms the fundamental aspects of the safety environment of the patient, as it improves safety needs, promotes error reporting and enhances minimization of errors in the system (Tamuz, Thomas & Franchois, 2004). Alsulami *et al*. (2013) conducted a systematic review of researchers dedicated to errors reporting, found them to be scarce and of poor quality.

Moreover, Marquis and Huston (2009) examined the reasons behind lack of error reporting, it was revealed that the leadership's authoritative structure hindered the reporting of errors.

Based on the emphasis expressed by Clarke (2006) who stated that the relationship between reporting system and patient safety must be studied within the context of leadership, so they can draw conclusions from these reports. Therefore, this study will examine the antecedent effects of transformational leadership on effective reporting system.

In conclusion, patient safety in the hospitals, expressed either in terms of number of patients who acquired adverse events or costs of treatment and compensations, is considered as an actual issue in Saudi Arabia as is the case in many countries worldwide. It is expected that patient safety is interrelated with a complicated web of factors including transformational leadership, HPWS, effective reporting system and organization climate. Based on the disclosed gaps, this study attempts to examine the effects of HPWS and effective reporting system on patient safety in Saudi Arabia. Also, the antecedent effect of transformational leadership on HPWS and effective reporting system; in addition, considering organizational climate as mediating variable that could explain how and why HPWS can affect patient safety. By doing so in a single study, a holistic theoretical understanding of what makes patient care more safely can be enhanced.

1.3 Research Questions

Based on the previous justifications, this research provides answers to the following questions:

1. Does the high performance work system (HPWS) influence patient safety in Saudi public hospitals?
2. Does the organizational climate mediate the relationship between high performance work system (HPWS) and patient safety in Saudi public hospitals?
3. Does the reporting system influence patient safety in Saudi public hospitals?
4. Does the transformational leadership antecede both the high performance work system (HPWS) and reporting system in Saudi public hospitals?

1.4 Research Objectives

Consistent with the research questions, the current study attempts to achieve the following research objectives:

1. To investigate whether high performance work system (HPWS) influence patient safety in Saudi public hospitals.
2. To investigate the mediating effect of organizational climate on the relationship between high performance work system (HPWS) and patient safety in Saudi public hospitals.
3. To examine the relationship between the reporting system and patient safety in Saudi public hospitals.

4. To examine the antecedent effect of transformational leadership on both the high performance work system (HPWS) and reporting system in Saudi public hospitals.

1.5 The Scope of the Study

The current study is concerned with elaborating the link between managerial aspects represented by transformational leadership, HPWS, effective reporting system and organizational climate on one of the sensitive indicators of the quality of healthcare which is the patient safety. So, Ministry of Health Public hospitals will be selected as they are the major provider of healthcare services, with 60% of hospitals and 58.6% of the beds being under their management in Saudi Arabia.

It is obvious from the previous studies that nursing represent the frontline of the health professionals, they are the most important human resource component in healthcare delivery, and they constitute the quality of care and patient safety (Al-Ahmadi, 2009; Richardson & Storr, 2010). Thus, nurses managers who believed in nurses' responsibility for patient safety (Al-Rifai, 2008; Kohn *et al*., 2000; Page, 2004), and responsible to carry out duties in various healthcare organizational levels, will be the right respondents as they report to the director of hospitals suggestions for policy changes, and technical support issues (Al-Rifai, 2008), and they would be able to provide feedback on management practices regarding patient safety.

Representativeness of the sample and appropriateness of the study design is expected to enable the researcher in extrapolating the results on health institutes with the same peculiarities.

1.6 Significance of the Study

1.6.1 The Theoretical Contribution

As disclosed earlier in the present study, the objectives of the study are to explore the influence of HPWS and effective reporting system on patient safety, mediating effect of organizational climate on the relationships, and the antecedent effect of transformational leadership on HPWS and effective reporting system. If the findings of clearly defined these relationship, the study will provide considerable contributions to both theory and practice.

In this context, the present study is referring in particular to the theoretical framework drawn from Donabedian's (1996, 2005) structure-process-outcomes (SPO) model, transformational leadership theory (Bass, 1985; Burns, 1978), and High Reliability Organization Theory (HROT) (Kemper, 2009). The study contributes to the body of knowledge through the examination of the determinants of patient safety, and the influence of the mediation of organizational climate, and the antecedent effect of transformational leadership in supporting HPWS and effective reporting system.

Specifically, the present study will be one of the first few studies that carries out an examination of the mediating effect of organizational climate in the relationship between

HPWS and patient safety, and the antecedent effect of transformational leadership on HPWS and effective reporting system as the previous studies only examined the link between HPWS and patient safety (e.g. West, Guthrie, Dawson, Borrill, & Carter, 2006), as well as between effective reporting system and patient safety separately (Waltson, Al-Omar & Al-Mutari, 2010).The present study linked these separate studies in the hope of offering a better understanding of the process involved in the relationship between HPWS, effective reporting system, and patient safety.

Furthermore, the present study also intends to add values to the literature concerning patient safety through the achievement of the following points: (a) providing empirical evidence regarding determinants of patient safety; (b) explaining the relationship between transformational leadership, HPWS, effective reporting system, organizational climate, and patient safety; and (c) providing a Saudi perspective on the above issue pertaining to organizational factors affecting patient safety.

1.6.2 The Practical Contribution

The study imposes crucial significance as it attempts to give insight into one of the major issues in Saudi Arabia's healthcare system which is patient safety. According to Al-Ahmadi (2009), due to the increasing awareness of quality improvement in Saudi Arabia, an interest regarding this particular issue has been growing. In addition, the planners in the Ministry of Health can also benefit from the research by using it to identify, investigate as well as examine the proposed factors that are found to influence patient

safety. And finally, the research can be used by decision makers to tackle and mitigate the negative factors that affect patient safety in the hospitals.

1.7 The Operational Definition of the Study Variables

A word often has different meanings. In order to avoid ambiguity, the key terms used in this are defined below.

Patient safety the initial definition of patient safety based on the Institute of Medicine's (IOM's) refers to prevention of harm to patients from the structures, processes, or practices of care (Institute of Medicine, 2003).

Transformational leadership defined as "a process in which the leaders take actions to try to increase their associates' awareness of what is right and important, to raise their associates' motivational maturity and to move their associates to go beyond the associates' own self-interests for the good of the group, the organization, or society. Such leaders provide their associates with a sense of purpose that goes beyond a simple exchange of rewards for effort provided" (Bass & Avolio, 1997, p.11).

High Performance Work System (HPWS) can be defined as systems of particular combination of HR interrelated practices designed to enhance employees' skills, commitment, productivity, and flexibility (Datta *et al*., 2005; James *et al*., 2008).

Effective Reporting System refers to the consistent reporting of adverse events, including incidents that reach the patient, near misses, and unsafe conditions, that are important enough to be explicitly defined and incorporated into robust reporting system

which takes into consideration the precise definitions of events of interest (Kinnaman, 2007).

Organizational Climate refers to the attitude of an individual towards organization, comprised of its degree of trust, morale, conflict, rewards equity, credibility of leadership, change resistance and scapegoating (Burton *et al*., 2004).

1.8 Organization of the Study

In order to achieve better understanding of the Saudi hospital context, this study starts with description of the health system in Saudi Arabia and explores the theoretical and practical background for the problem of patient safety, putting into consideration the plausible lack of knowledge about the antecedent effects of transformational leadership and its relation with the high performance work system, and effective reporting system and the mediating effect of organization climates in public hospitals. The aim of chapter two is to address the gap in knowledge about the influence of the high performance work system and effective reporting system on patient safety and the role of the organization climate in mediating the effect of the high performance work system on patient safety. Chapter three describes the theoretical framework and the hypotheses development for this influence through extensive review of literature for relevant studies. Chapter four describes the research processes including procedures, sampling, data collection, study tools, statistical manipulations and ethical considerations. Chapter five presents the results of the study derived from statistical analysis of collected data. Different forms of presentations are provided, namely, tabular, graphical and texts. In chapter six, the

findings are interpreted, discussed and compared with pertinent studies, and eventually, the conclusion and recommendations based on our findings are formulated.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides a review of relevant literatures on the issues under study. In this chapter, the review is focused on transformational leadership, high performance work system, effective reporting system, organizational climate, and patient safety. Throughout this discourse, the theories behind each variable, its dimensions, related previous studies, and the gap of knowledge in the main body of existing researches are illustrated. The main stream of this review is guided towards providing a clear view of the existing relationships between the studied variables either separately or in conjunction and the impact of these relationships on patient safety.

The first section provides theories on patient safety which represent the principal concern of the study.

2.2 Underpinning Theories

The inter-relation between transformational leadership, high performance work system (HPWS), effective reporting system, and organizational climate and their effects on patient safety can be understood by a number of related theories. Although there are many theories related to patient safety such as Benner's theory, Reason's theory. This current study uses theories of transformational leadership theory, Donabedian theory, and High Reliability Organization Theory (HROT). Because they could explain the inter-

relationships investigated. For example, in explaining the relation between employees and their leaders and human resource managers, transformational leadership theory is considered the most appropriate while Donabedian theory could help explain effective reporting system and patient safety.

2.2.1 Transformational Leadership Theory

Literature proposes several leadership theories. But among the widely addressed theories is the transformational leadership theory (Bass, 1985; Burns, 1978). This theory has attracted much attention in terms of organizational leadership compared to other theories (Judge & Bono, 2000; Judge & Piccolo, 2004). Among the pioneering comparisons made between transactional and transformational leadership models were conducted by James McGregor Burns (1978). He developed his model on the basis of the seminal work of Weber (1947) concerning charismatic leaders. Bass (1985) in turn built upon Burn's theory of leadership and enhanced the theory by addressing its drawbacks. Burns contended that transformational and transactional leadership at the opposite ends of a single leadership continuum. Specifically, Bass and Avolio (1990) highlighted the non-exclusivity of both approaches and their complementary nature. Their findings were based on research employing the Multifactor Leadership Questionnaire (MLQ) they have devised. The MLQ is extensively discussed in the later parts of the review.

Transformational leadership defined by Bass (1985) as the way a leader affects his followers. In the paradigm of transformational leadership, the leader encourages and influences followers to broaden and elevate their goals and by nurturing them with

confidence to act beyond their expectations and beyond the exchange agreement (Dvir, Eden, Avolio, & Shamir, 2005). Followers are urged to trust, admire and respect the transformational leader. Bass suggested three ways in which followers are transformed by leaders: by setting their higher-order needs in motion, motivating them to concentrate on the team rather than individual needs, and by enhancing their awareness concerning the team's goals. Transformational leadership has five distinct characteristics according to Bass and Avolio (1995):

1. Idealized Influence (charisma-attributed)—when the leader exhibits the ability to instill pride and faith in followers and motivate them to go beyond self-interest;
2. Idealized Influence (behaviour)—when the leader has the ability to share values and beliefs with followers, informs them of the consequences of decisions, and motivates them to understand the sense of mission;
3. Inspirational Motivation—when the leader inspires the subordinates to have an optimistic attitude and pursue challenges with confidence, they learn to have confidence in their own ability;
4. Intellectual Stimulation—when the leader is able to stimulate the followers to be creative and innovative as well as develop problem-solving techniques; and
5. Individual Consideration—when the leader has the unique quality of respecting followers, treating them as individuals and responding in a timely manner to their needs.

Idealized influence is a concept that is predicated upon the premise that real trust must be developed between leaders and followers. A strict moral and ethical basis is the core of leaders and followers trust. According to Bass (1990), in a truly transformational leadership, idealized influence is reflected by higher moral and ethical standards. This dimension reflects the future vision.

On the other hand, inspirational motivation dimension provides followers with challenges and meaning behind their engagement in shared goals and activities. It is the manner in which the leader urges the followers to do what must be done and why it is the right action to undertake. In other words, it is the declaration of the vision. It is noteworthy that Bass (1988) later combined the dimensions of idealized influence and inspirational influence together to form charisma as the two factors were not discrete experimentally.

As for the third dimension namely individuals consideration, it clarifies the need to treat individual followers singly and to provide coaching, mentoring, and growth opportunities for each. This satisfies the need of the individual to achieve actualization, self-fulfillment and self-worth and pushes the individual to grow and achieve on his/her own volition.

Intellectual stimulation is the last dimension of transformational leadership and it is the most important in terms of occupational safety. It assists followers in questioning suppositions and to produce effective solutions to issues they may come across while bringing about positive change. The leader's vision forms the framework upon which followers see how they are related to their leader, the organization, each other and the objectives. Upon the casting of the vision, followers are urged to act on it and it is

intellectual stimulation that enables to creatively find ways to solve challenges that are barriers to their mission. Followers must be provided with the autonomy to challenge conventional methods and to question the status quo in order for this to happen (Bass & Avolio, 1993).

Since the main focus of the current study is directed towards the relationship between transformational leadership, HPWS, and organizational climate, which is simply describing human relationships within a confined community, transformational leadership theory is deemed to be the most appropriate to achieve such objective. Indeed, according to several researchers, transformational leadership theory has been accepted as one of the most influential conceptual paradigms explaining organizational behavior (Bass & Riggio, 2005; Avolio & Yammarino, 2002; Walambwa, Orwa, Wang, & Lawler, 2005).

2.2.2 Donabedian Theory (Stracture- Process- Outcome)

Donabedian (1980) offers a refined and well-used framework of patient care quality in which he classified two basic features of patient care: technical and interpersonal. Technical features of care refer to the proper implementation of professional knowledge and skills to improve health care. Interpersonal features of care include both the relationships between patients and health care professionals along with the contextual features of care. Human resource policies and practices are likely to impact patient care quality by influencing both technical and interpersonal aspects of quality care (Flood, 1994; Laschinger, Shamian, & Thomson, 2001).

Quality and patient safety are initially determined by the degree to which health care improves important patient outcomes whereby the assessment of quality is based essentially on structure, processes and outcome (SPO) (Donabedian, 1988). In this context, Donabedian (1982) conceptualized quality as being how well an organization accomplishes that which it says it intends to do. Accordingly, it is expected that an organizations that implements quality provide regular answers for "Are we doing the right things (strategic quality)? Are we doing things right (system quality)?" (Brache, 1988). To answer these questions, we refer to the triad of Donabedian theory for quality "structure–process–outcome". From the standpoint of patient safety, Donabedian's model provides a patient safety framework, and it allows for exploration of how risks and hazards embedded within the structure of care have the potential to cause injury or harm to patients (Donabedian, 1982). Based on Donabedian theory, Irvine *et al*. (2000) developed a model describing the role effectiveness of nurses. Within this model they incorporated reporting of adverse events whether dependently or independently as the responsibility of the nurses. James (1989) contended that the hierarchical specifications of health care organization form the foundation of a consistent reporting system.

The Donabedian theory has been frequently used in evaluating health services and patient outcomes (Wan, Zhang, & Unruh, 2006; Mor, 2005). The SPO framework has been greatly accepted as the most appropriate in hospital research particularly in trying to understand the "structure-process" connection and adverse events threatening patient safety as it permits in focus examination of the outcome in light of both the structure and process (El-Jardali & Lagace, 2005) . For these reasons**,** Donabedian theory is adopted in

the current study to support the assessment of the effective reporting system which is considered as one of the fundamental prerequisite to ensure better patient safety. The following diagram demonstrates the effective reporting system in light of the Donabedian theory.

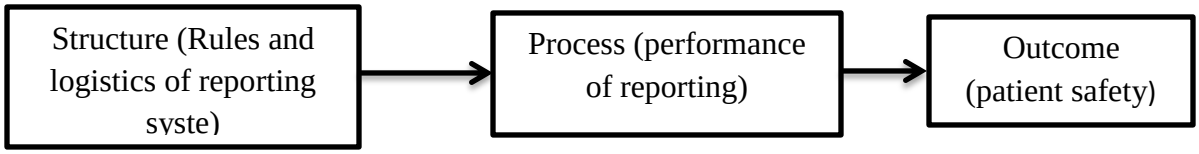


Figure 2.1
Effective reporting system Donabedian theory

2.2.3 High Reliability Organization Theory (HROT)

Researchers in health field turned into other risk system to find answers and theoretical background for their models, for example the aviation field, atomic and chemical plants; among the theories that could be applied in health field is the High Reliability Organization Theory (HROT) (Kemper, 2009). This theory had been originated from the Normal Accident Theory (NAT) described by sociologists (Roberts, 1990) which came as an answer for the question why some high risk systems are regarded as highly reliable and it explain the reasons for the differences in organizational performance from the prediction of (NAT) (Roberts, 1990; Weick, Sutcliffe, & Obstfeld, 2005). The principle construct of the high reliability organization theory is the culture of reliability or culture of safety; this later had been described by the Advisory Committee on the Safety of Nuclear Installations and adopted by AHRQ as being the product of individual and group values, attitudes, perceptions, competencies, and patterns of behavior that determine the commitment to, and the style and proficiency of an organization's health and safety management (Health and Safety Commission, 1993). In its essence, the HROT comprises

six major dimensions namely: redundancy, centralized decision making, decentralized decision making, teamwork/group mind, trust and organizational learning, these dimensions are described as follows (Weick *et al*., 2005; Sutcliffe, 2006): By redundancy it is meant the ability of detection of errors before it occurs (vigilance) through different check methods; centralized decision making refer to ability of the organization leaders to establish core values, standards, and priorities upon which all decisions are based; on the same line, the decentralization of decision making is done through the organization leaders who support front-line staff to make decision based on individual and group knowledge and training; in this era, decisions are usually made at the level of greatest expertise. The individual and group values safe processes over individual interests and uses communication strategies to increase group knowledge particularly related to the detection of possible system failures; these processes are performed in climate of trust held by individuals regarding their team members, leaders, and organizational processes and belief in the effectiveness of established processes and supported by continual training to achieve a high degree of specialization and integration among team members. In view of the main construct of the high reliability organizational theory (HROT) which is conceptualized around the culture of safety, which explain the perception and attitude of employees that will be reflected on their behavior, we could propose that this theory could provide theoretical background for the organizational climate; in addition, it could give a clue for the relationship between organizational climate and other variables which incorporate either trust within its dimensions such as leadership or training such as high performance work system.

2.3 Patient Safety

According to the Institute of Medicine (IOM) in the U.S., patient safety refers to the freedom from involuntary injury brought about by medical care, or medical mistakes (Kohn, Corrigan, & Donaldson, 2000, p. 18). It further added that patient safety may be described as the evasion, deterrence and the minimization of negative results or injuries stemming from health care (p. 57). Similarly, the Royal College of Physicians and Surgeons of Canada (2003) defined patient safety as the decrease and minimization of unsafe actions in the system of health care through the employment of best practices that result in superior patient outcomes (p. 12). This definition was advocated by the Canadian Council on Health Services Accreditation and the Canadian Patient Safety Institute (CPSI). Moreover, from the conceptual viewpoint, patient safety is considered as the steering clear of, avoidance and minimization of negative results or injuries that is brought about by the health care processes (Cooper *et al*., 2000; Richardson & Storr, 2010). In sum, IOM concluded that patient safety, in its original form is the avoidance of harm to patients in health care (Institute of Medicine, 2003). Hence, the main aim of patient safety is to minimize the injury or risk from harm to patients from the structures or processes making up health care (Battles & Lilford, 2003).

It is possible to get rid of all types of harm in health care according to the interpretation of the concept 'harm'. The initial efforts exerted to determine the causes of potential inpatient harm have their basis on biological factors like patient age and level of illnesses, among others (Al-Haider & Wan, 1991; Bradbury, Stearns Jr., & Steen, 1991) whereby these efforts were geared towards exploring the differences in factors that are linked to

the quality care differences (Dubois, Rogers, Moxley III, Draper, & Brook, 1987). As such, patient safety and quality of care have been attracting significant attention in research carried out in many countries (Aiken, Clarke, Sloane, Sochalski, & Silber, 2002; Teng, Hsu, Chien, & Chang, 2007).

One of the issues in patient care is the overlap between the meaning of safety and quality. According to the IOM, quality of care is the level to which health care services for both individuals and groups heightens the possibility of desired health results and are aligned with the present knowledge of the profession (Emanuel *et al*., 2009). The issues of health care quality were primarily categorized into three namely underuse, overuse and misuse, all of which are common as shown by evidence (Emanuel *et al*., 2009). Despite the efforts of the IOM Roundtable to put a distinction between misuse and error, where the latter may or may not lead to complications, misuse became a common term for conceptualizing patient safety as an element of quality (Chassin & Galvin, 1998). Moreover, as patient safety garnered increasing attention, the distinction between overuse, underuse and misuse categories slowly dissipated (Leape & Berwick, 2006). Leape and Berwick (2006) contended that it appears logical that patients who do not receive required treatments, or those who are exposed to unnecessary risks or unwanted care, are placed at risk for injury that causes as much danger as direct harm from a surgical mistake (Emanuel *et al*., 2009).

On the basis of the above overlap explanations of patient safety with quality care, organizations and investigators alike are attempting to determine ways to enhance patient care delivery and safety. Several of them are aiming to incorporate patient safety

practices into health care. Along with these practices, the evidence-based practice is considered as a type of process, when applied, minimizes the potential of a negative event from occurring together with incorporating different safety practices such as incident reporting, root cause analysis and the promotion of safety culture from fields outside of medicine or nursing (Emanuel *et al*., 2009). Despite the fact that these safety practices have been proven to be successful time and again in commercial aviation, nuclear safety and aerospace, many of them lack evidentiary base in the literature of health care (Shojania *et al*., 2001). As a discipline, patient safety was initiated in reaction to evidence that negative medical occurrences are recurring but preventable and the aim behind patient safety is to alleviate negative events and phase out preventable harm in health care.

Moreover, the IOM was among the top advocates who highlighted patient safety's dependence on health care systems and organizations, where patients should be protected from injury stemming from processes in the system and organization of care. They stated that patient safety and quality of care would be enhanced by holding systems accountable, and redesigning them to minimize the impact of human factors, and by using strategic improvements (Institute of Medicine, 2001). Similarly, Sexton, Thomas, and Helmreich (2001) contended that in order to minimize mistakes, efforts should exerted towards supporting organizational systems and methods that enhance health care providers' capabilities in a manner that occurrence of errors are prevented. They also emphasized the notion that errors analysis should be directed towards organization as opposed to individual factors.

As a result of the above contention, several studies have examined the relationship between patient safety and organizational factors. To start with, Walston, Al-Omar and Al-Mutari (2008) considered management involvement, reporting systems with effective policies and procedures, and organizational resources as among the elements of the organization evidenced to be related to patient safety. They further argued that management is largely responsible for organizing hospital medical services to guarantee that fundamental safety patient outcomes are achieved. On a more general point of view, Nolan (2000) claimed that for the reduction of medical errors, it is important for organizations to minimize complexity, empower information and recording systems and prevent procedures from posing a threat against patient safety.

In a similar line of contention, Harris *et al*. (2007) elaborated on the link between patient safety and organizational factors through a systematic literature review. They highlighted the relationship between patient mortality and human resource management (HRM), as mediated by the quality of care. But the issue in comprehending the effect of a certain HR practice on organizational outcomes lies in the fact that any of the practices do not act or affect workforce in piece meal (Takeuchi, Lepak, Wang, & Takeuchi, 2007). Therefore, researchers consider the use of a holistic approach when examining the effect of HRM upon organizational outcome (Takeuchi, Lepak, Wang, & Takeuchi, 2007). But despite the importance of HRM, according to Kabene *et al*. (2006) and Harris *et al*. (2007), HRM in the health care sector is largely untouched stressed on the need to explore this topic further.

Generally speaking, there is a consensus as the fact that patient safety is nurse sensitive. The phrase 'nursing-sensitive' was coined by Maas *et al*. (1996) in their attempt to present patient outcomes impacted by the nursing practice. Instances of outcomes of patient safety are nosocomial infections like central line infections, pressure ulcers and failure to rescue or failure to rescue a patient from cardiac arrest, shock, among other complications. Prior studies on patient safety showed that nurse-related predictors of patient safety include level of nurse staffing (Aiken *et al*., 2002; Laschinger & Leiter, 2006), and level of nurse education (Aiken, Clarke, Cheung, Sloane, & Silber, 2003). Specifically, Aiken *et al*. (2003) contended that the rates of mortality and failure-to-rescue in the context of surgical patients are not as high in hospitals where nurses possess baccalaureate degrees or higher. In other words, the education of nurses maximizes their ability to ensure patient safety, while their commitment maximizes their inclination to fully use their abilities in ensuring patient safety.

According to some scholars, in order to select patient safety outcomes variables, the event must be considered preventable and the measures clinically meaningful (Zhan *et al*., 2005). In addition, nursing-sensitive measures should be incorporated as patients are basically kept in hospitals because they need nursing care, and based on strong evidence, focusing on nursing would enhance patient safety (Aiken, 2005).

In their quest to tackle the requirement for standardized patient safety outcome measures, the Agency for Health Care Research and Quality (AHRQ) laid down criteria for comparing risk-adjusted hospital rates for many categories of preventable negative occurrences in studies employing administrative data particularly data employed in

relation to the Health care Cost and Utilization Project (HCUP). These criteria, better known as Patient Safety Indicators (PSIs), comprise 20 hospital based indicators for medical conditions and surgical procedures that were shown to have negative rates of occurrence that differ significantly throughout institutes and for which evidence shows their relationship with deficiencies in care provision. These twenty PSIs essentially reflect a selective list of probable safety-related occurrences that are considered susceptible to discover with the help of administrative data, sufficiently coded in prior studies and sensitive to quality of care (Romano *et al*., 2003).

The PSIs are developed to monitor administrative data and despite the availability of administrative data, its reasonable cost and its inclusion of a large population (Zhan & Miller, 2003), it is not without limitations as most administrative data were gathered for other uses (Zhan *et al*., 2005). However, even with limitations, The *Agency for Healthcare Research and Quality's (*AHRQ's) release of the Patient Safety Indicators (PSIs) introduced a new opportunity for patient safety research through administrative data. In addition to this, measures have been laid down by governmental/regulatory agencies and individual investigators for studies. Furthermore, in-depth evaluation is required for the reliability and validity of the measures employed in patient safety research (Merwin & Thornlow, 2006) and additional studies are required to reinforce the PSIs including nursing-sensitive measures and their ability to detect errors. This is important as evidence from recent analysis of data from the Hospital Quality Alliance national reporting system indicates that performance differs across hospitals as well as indicators (Jha *et al*., 2005).

Patient safety indicators refer to the involuntary event or dangerous condition that arises during the process of care that is not attributed to the patient's underlying disease and that leads to or have the possibility of leading to unintended patient health outcomes (Miller, Elixhauser, Zhan, & Meyer, 2001). A top indicator of patient safety is the level of negative events among patients in the hospital where negative events refer to unintended injuries/complications that stem from health care management as opposed to patient's underlying disease, and that lead to death or disability at the discharge time or during long hospital stays (Brennan *et al*., 1991; Wilson *et al*., 1995). More importantly, despite the ability of record-based measurement to produce a whole list of health-threatening occurrences, not all of these occurrences are reported (Potylicki *et al*., 2006). Some barriers to reporting are desire to save face (Chiang & Pepper, 2006), and fear of punitive consequences (Kanse, van der Schaaf, Vrijland, 2006).

2.3.1 Frequency of Occurrence of Adverse Events

According to the Institute of Medicine (2003) patient safety is described as the prevention of harm to patients and it is often measured as a low frequency of recorded negative patient occurrences like patient falls, nosocomial infections, medication errors, urinary tract infections, pneumonia, mortality and failure-to-rescue (Aiken *et al*., 2002, 2003; Laschinger & Leiter, 2006). Nevertheless, defining patient safety based on record-based indicators may not be sufficient, as specific negative events are not noted down in medical charts or reports; these include erroneous or incomplete documentation and untimely care (Elfering, Semmer, & Grebner, 2006). Thus, formal records may be supported by nurses' subjective assessments when measuring patient safety.

Literature contains several proposals as to what items should be employed to measure patient safety on a subjective level. This is because patient safety assessment is challenging, with different studies using different techniques to investigate patient safety (Aiken, Clarke, Cheung, Sloane, & Silber, 2003; Brennan *et al*., 1991; Penoyer, 2010; Wilson *et al*., 1995). Among the known techniques, Teng, Chang and Hsu's (2009) method is deemed to be the most suitable in achieving the current study's objectives owing to several reasons and mainly because the items included in the tool are nurse sensitive and hence appropriate to the study participants. The items comprise six areas linked with nurse practices, which are injuries from care, patient falls, and nosocomial infection, errors in medication, untimely patient care, and erroneous/incomplete documentation. Participants are requested to respond to items that deal with the frequency of events in terms of the above six items related to themselves or their patients in the previous year.

Generally, errors in medication are deemed as a common health problem the world over; for example, in a developed country like UK, it was revealed that medication errors took second place as the primary cause of occurrences that threaten patient safety, after patient accidents, during their stay in hospitals. Medication errors constitute 11% of all negative incidents (Hamad, Cavell, Wade, Hinton, & Whittlesea, 2013).

An urgent need for establishing clearly defined process of full documentation of negative occurrences exists given the presence, nature and outcomes of incidents that threaten patient safety. This documentation is important as it enables critical analysis of the reasons that are giving way to occurrences and it clarifies the necessities of changes to

minimize them (Uribe, Schweikhart, Pathak, Marsh, & Fraley, 2002). In other words, the robust documentation of an efficient reporting system is critical in facilitating practice and organizational change to enhance patient safety (Schweikhart, Pathak, Marsh, & Fraley, 2002).

Meanwhile, nosocomial infection refers to hospital acquired infection or health care related infections and is deemed as the primary complication which threatens patient safety during their stay in hospitals. It is the second common category under negative events (Burke, 2003). This type of infection is affected by the activities of health care workers who are employed within the organization that is the determinant of their behavior catered to cross infection prevention (e.g., strict hand washing) (Larson, Early, Cloonan, Sugrue, & Parides, 2000).

In health care organizations and institutions, the involuntary erroneous performance of nurses may negative impact on patients (Lang, Hodge, Olson, Romano, & Kravitz, 2004). Even though nurses are not directly responsible for their falls, they are considered the staff members who are in direct contract with the patients at all times, and thus are responsible to anticipate these falls and prevent them in a timely manner (Majesky, Brester, & Nishio, 1978). Moreover, the nurses' performance in securing patient outcome is shown to be related to the organizational climate. A systematic review of literature shows that significant relationships exist between specific adverse aspects of hospital organizational climate and negative health effects in registered nurses (Gershon *et al*., 2007). Thus, in the present study, insights of nurse managers were obtained concerning the frequency of occurrence of adverse events for patient safety measurement.

2.3.2 Overall of Perception Patient Safety

Suffice it to say that nurses have a key role in guaranteeing patient safety owing to their significant opportunity to report issues of patient safety (Carayon, Hundt, Alvarado, Springman, & Ayoub, 2006). Nurses interact with patients every hour of the day while delivering care to them (Page, 2003) and therefore, nurses' perception regarding medication errors and procedures and systems for the administration of medications may shed a light on ways to enhance patient safety outcome and ensure superior patient service (Gordon, 2012).

Other studies (e.g., Al-Rifai, 2008; Durbin, Hensen, Sinkowitz-Cochran and Cardo, 2006; Ginsburg, 2003; Ginsburg, *et al*., 2005) contended that a more extensive method to maintaining patient safety is to explore human as well as organizational aspects through the understanding and inclusion of nurses' perceptions in decision making pertaining to patient safety. But this is largely ignored. Specifically, while literature addresses the perceptions of health care providers concerning patient safety (e.g. Durbin, Hensen, Sinkowitz-Cochran, & Cardo, 2006; Ginsburg, 2003; Ginsburg *et al*., 2005), the perception of nurses is largely unexplored. According to Al-Rifai (2008), further studies are required to incorporate this element in future models and methods to patient safety.

Upon establishing the importance of nurses' perception regarding patient safety as a tool for measuring patient safety, it is noteworthy that demographic characteristics of participants affect the perception of people and their priorities selection (Durbin, Hansen, Sinkowitz-Cochran, & Cardo, 2006; Ginsburg *et al*., 2009). Therefore, in the present

study, the perceptions of nurse managers were obtained concerning for patient safety measurement.

2.3.1 Nursing Practice

As “unsafe care” will eventually lead to disease, it is argued that patient safety is closely linked with nursing profession than any other health care job. This is because nurses are the most appropriately appointed human resource to maneuver the agenda of the health care in terms of safety and quality owing to their close relationship to the patients (Richardson & Storr, 2010). This notion was assured through an extensive study carried out by Richardson and Storr (2010) who reviewed 1788 titles on nursing and patient safety. They showed that great potential for improvement can be achieved through empowerment of nurses, leadership and tools development to reinforce and support the influential role of nurses in the health care activities.

Squires, Tourangeau, Laschinger, and Doran (2010) observed that lack of quality of work environment is what contributes to the prevailing employee’s intention to quit, absenteeism, and emotional burnout in the nursing work force. For example, it was reported from Fiji that health professionals were compelled by the work environment, full of infrastructural deficiencies and stress, to migrate and find job in rich countries (Stewart & Usher, 2010). This becomes a serious problem in the backdrop of heavy shortage of nurses in various health care sectors in the world (Squires, Tourangeau, Laschinger, & Doran, 2010). There is a general agreement that nursing staff all over world work under stressful conditions (Squires, Tourangeau, Laschinger, & Doran, 2010). It is also clear

that stressful work atmosphere can lead to potential errors (Squires, Tourangeau, Laschinger, & Doran, 2010). Cho *et al*. (2003) found that about 66% of the nursing work force reported stress and emotional exhaustion. It was suggested that a more dynamic and human concept of leadership can remedy these issues (Roussel, 2006). Aiken *et al*. (2011) revealed that the work environment is more crucial for ensuring better patient outcome that patient-to-nurse ratio. Specifically, they stated that "lowering the patient-to-nurse ratios markedly improves patient outcomes in hospitals with good work environments, slightly improves them in hospitals with average environments, and has no effect in hospitals with poor environments" (p. xx).

Richardson and Storr (2010) discussed the Patient Safety Program initiated by World Health Organization (WHO) to promote equity in medical care across the world and observed that nurses were appropriately positioned human resources to lead in health care safety and quality. This puts the nurses in the center of patient safety discourses. In this discussion, patient safety is examined in terms of the role of nurse managers, who are integral part of the modern concept of high performance work systems as well as that of organizational climate and transformational leadership.

2.3.1.1 Nurse Manager

Pillay (2011), and Jasper and Crossan (2012) referred to nurse managers as the largest group of operational managers in hospitals and as such, they are central to implementing strategic objectives. Similarly, McCallin and Frankson (2010) referred to line nurse managers as the ones in the center of the action when a strategy requires implementation.

Nurse managers have a pivotal role in influencing hospital strategies and planning activities to keep them aligned with the competitive environment. Pioneering studies, like the one conducted by Aroian *et al*. (1997), stated that nurse managers are considered the top hospital asset. In fact, the health care organizations' success and failures largely depend on them (Jasper & Crossan, 2012) as they control most of the operations in health care organizations.

Evidence points to the face that nurse managers role has transformed throughout history (Hutchinson & Purcell, 2010), with particular shift noted from routine supervision to being a mini-general manager who is responsible for a more extensive array of management activities. Health care industry changes have resulted in the role's evolution, which now calls for nurse managers to possess advanced business knowledge and skills (Kleinman, 2003; Jasper & Crossan, 2012).

2.3.2 Patient safety in Saudi Arabia

Walston, Al-Omar and Al-Mutari (2008) investigated the factors that influence patient safety in Saudi hospitals. They showed the key factors to be support from management, effective reporting system and sufficient resources. Another study done by Almalki, Fitzgerald, and Clark (2011) listed the challenges to Saudi health care system. They include lack of Saudi health professionals, multiple roles of health ministry, insufficient financial resources, dynamic patterns of disease, extensive demand from free services, and the lack of a national crisis management policy, lack of accessibility to health care facilities, lack of national health information system, and the oversight of potential of

electronic health strategies.

A serious challenge faced by Saudi health care system is the lack of local health care professional and the resulting domination of expatriates (Almalki, Fitzgerald, & Clark, 2011). This has caused an overall instability in the health care sector (Almalki, Fitzgerald, & Clark, 2011). Saudis amount to only 38% of the total health care work force in the country (Almalki, Fitzgerald, & Clark, 2011). In the future also, as the health care system expands into more areas, this percentage is bound to go down further (Almalki, Fitzgerald, & Clark, 2011). It is clear that only by improving these areas regarding imbalance of Saudi and non Saudi professionals' ratio in favor of non Saudis who have different background and relative frequent turn over, better patient safety can be ensured. This is the context where leadership and high performance work systems come in as crucial elements.

While Saudi health system faces the shortage of health professionals, the country has also been facing the huge migration of high skilled, native health professionals to the developed world (Almalki, Fitzgerald, & Clark, 2011). It is the increased global mobility of work force in general, and the higher incentives offered by developed nations' health care sector that has brought about this situation (Almalki, Fitzgerald, & Clark, 2011). It is observed that along with salary incentives, developing countries utilize other strategies to lure professionals including housing, infrastructure, and job rotation opportunities and Saudi Arabia will have to think about similar strategies.

In consistent with the objective of the study, the next section focuses on factors that affect

patient safety, beginning with transformational leadership.

2.4 Transformational Leadership

Leadership refers to the power of the individual to influence other individuals (Tappen, Weiss, & Whitehead, 2004) and to encourage them to develop and achieve common aims (Richardson & Storr, 2010). Transformational leadership occurs when leaders act in an attempt to maximize the awareness of their associates of what is right and important, to increase their motivational maturity and to move them to see beyond their self-interests for the sake of the group, the organization and the society as a whole; in this context, Transformational leaders promote their associate's sense of purpose that goes beyond the reward for effort exchange (Bass & Avolio, 1997).

Literature addresses the significance of leadership and its role in developing an environment and a system of safety within the organization. According to Baker and Norton (2001), a leader's role is important in the development of a patient safety plan. Similarly, Leape and Berwick (2000) stated that leadership is the main element of success in the safety realization, and that lack of commitment from professional and organizational leaders will achieve fragmented and uncoordinated efforts that will barely make a difference. Thus, they urged senior leaders to stress safety as an organizational goal and reinforce it with suitable resources in way that they feel personally accountable for each error.

On the same note, Pater (2006) maintained that organizational leaders have key impact on safety performance. This assertion is corroborated by empirical studies on the

relationship between transformational leadership behaviors and safety outcomes that are linked to safety culture (e.g. Barling, Loughlin, & Kelloway, 2002; Groom, 2006; Zohar & Luria, 2004). The premise is that behaviors of leaders affect the safety climate and culture, which in turn influences the outcome measures related to safety performance (Barling *et al*., 2002). Despite the significant studies dedicated to safety climate and safety culture in various industrial settings, there is still lack of consensus concerning the definitions of safety climate and culture (Wiegmann, Zhang, von Thaden, Sharma, & Mitchell-Gibbons, 2004). But even in the face of this lack in consensus, several studies have been conducted to compare leadership behaviors with safety climate and culture measures (e.g., Clark, 2006; Erickson, 2008; Groom, 2006; Hoffman & Morgeson, 1999; Kelloway, Mullen, & Francis, 2006; Luria, 2008; Simon & Frazee, 2005; Watson, Bishop, & Trunbeaugh, 2005; Zohar, 2002; Zohar & Luria, 2004).

Predominant studies in this field have concentrated on transformational leadership theory (Bass, 1985; Burns, 1978) when assigning leaders within the categories of leadership. Stated differently, majority of studies that have attempted to analyze potential relationships between leadership behavior through MLQ-5X and safety outcomes, concentrated on the cultural elements of safety rather than directly measuring its outcomes, namely, injuries and accidents. Accordingly, Barling *et al*. (2002) brought forward a model demonstrating the potential association between safety-related outcomes (occupational injury) and behaviors of transformational leadership. This is followed by Kelloway *et al*.'s (2006) study that presented the potential existence of a direct association between transformational leadership behaviors and outcomes. Despite the

extensiveness of both studies, they lacked generalizability as they both assessed young workers in the context of a low-hazard industry. As mentioned earlier, researches dedicated to evaluating the relationship between transformational leadership behaviors and safety-related outcome variables like frequency and severity of injury in the context of health care institutions are still few and far between.

With regards to transformational leaders, Bass and Avolio (1994) attributed them with idealized influence, inspirational motivation, intellectual stimulation and individualized consideration. The above attributes enable transformational leaders to drive individuals working for them in a manner that they act long-term self-development as opposed to short-term. This type of leaders also urges followers to go beyond personal self-interests for the sake of the group, organizational and society as a whole and concentrate on the most critical aspects of their work and life (Bass, 1990).

In conflict with popular opinion, leadership is significantly different from management and while organizations are open to defining management skills for a specific position, they failed to identify leadership skills/attributes needed for the same position. This may be attributed to the fact that the predictive value of the leadership attributes in guaranteeing operational success in terms of organizational outcomes is still ambiguous. Thus, while tacit consensus exists for the effect of leadership behaviors on organizational outcomes like those linked to safety, there is still lack of understanding of the way these behaviors impact outcomes (Joseph & Steensm, 2012). The initial step in determining the effect of these behaviors on the outcomes is to distinguish between leadership and management and to define leadership behaviors on the basis of leadership theories.

It is well known that in majority of organizations, managers are appointed to provide leadership but managers are mostly involved in laying down processes, overlooking tasks and assessing progress. On the other hand, leadership is described as a relationship with different facets involving associations between leaders and followers (Hirtz, Murray, & Riordan, 2007; Kark & van Dijk, 2007). A leader's primary task is to transform his/her followers into future leaders (Taylor, 2003). Another critical difference between leaders and managers is that the former basically provides vision, sets values and mission and lays down goals (Clovard, 2003). Additionally, leadership is a concept that is related to an enhanced future state while management is a concept that is related to the maintenance of an efficient present state. Moreover, managers are appointed to their position, while leaders are granted a role by their followers to influence the latter's actions (McLean, 2005). However, this does not mean that managers cannot be leaders.

In fact, managers often lead but the difference lies in the way they perform their duties - whether they are leading or managing. Groom (2006) claimed that a person manages when he acts according to authoritative procedures and a person leads when he acts according to what is right. It is noteworthy that both managers and leaders are critical to the dynamic of the organization and should not be set against each other but considered in tandem to achieve tasks and cast a vision providing the constructs for an enhanced future state. For instance, if the organization has a vision of enhancing overall occupational safety performance but does not have the systems, processes and outcome measures to manage it, the vision will just be a dream. Similarly, if the organization has the systems, process and outcome measures but does not have a leader to drive people

into action, the vision will be left unrealized. However, this does not indicate that all leadership or management methods are effective in every situation. According to many studies, different leadership behaviors have different impacts in terms of outcomes and safety-related variables (e.g., Kelloway *et al*., 2006; Clarke & Ward, 2006; Barling *et al*., 2002; Groom, 2006; Luria, 2008). This literature review does not intend to explain every nuance of the differences between leadership and management but to explain that managing and leading are distinct from each other and to clarify that how people lead as managers can impact the ability of the organization to achieve an improved future state.

Transformational leadership has five distinct characteristics according to Bass and Avolio (1995):

1. Idealized Influence (charisma-attributed)—when the leader exhibits the ability to instil pride and faith in followers and motivate them to go beyond self-interest;
2. Idealized Influence (behavior)—when the leader has the ability to share values and beliefs with followers, informs them of the consequences of decisions, and motivates them to understand the sense of mission;
3. Inspirational Motivation—when the leader inspires the subordinates to have an optimistic attitude and pursue challenges with confidence, they learn to have confidence in their own ability;
4. Intellectual Stimulation—when the leader is able to stimulate the followers to be creative and innovative as well as develop problem-solving techniques; and

5. Individual Consideration—when the leader has the unique quality of respecting followers, treating them as individuals and responding in a timely manner to their needs.

The current research made use of four items each for the attributes, behavior, inspirational motivation, intellectual stimulation, and individualized consideration.

2.4.1 Transformational Leadership, Operational Outcomes and Organizational Effectiveness

An increasing body of literature suggests that transformational leadership positively affects individual, group and organizational levels (e.g., Bass, 1997, 1998; Judge & Piccolo, 2004; Lowe, Kroeck, & Sivasubramaniam, 1996; Murphy, 2002). Early studies indicated that transformational leadership was a specific significant paradigm in the military context but more recently, studies found its application in various sectors, settings and even cultures (e.g., Bass & Riggio, 2005; Avolio & Yammarino, 2002; Walambwa, Orwa, Wang, & Lawler, 2005).

Majority of studies showed positive associations between transformational leadership and organizational effectiveness metrics including productivity, organizational commitment, lower job dissatisfaction, and lower employee's stress (e.g., Daenzer, 2009; Murphy, 2002; Avolio, Weichun, Koh, & Bhatia, 2004; Walumbwa *et al*., 2004). Specifically, Humphreys (2002) indicated that transformational leaders often outperform leaders who depend on other leadership approaches. Over 100 studies have been carried out in various sectors, nations and situations and most have reported the advantageous association between organizational performance and transformational leadership. In fact, evidence

shows that transformational leadership remains a significant predictor of follower motivation, satisfaction, and perceptions of leader effectiveness even when statistically controlled for possible confounding behaviors of leadership (Judge & Piccolo, 2004). Well-documented effects of transformational leadership have been revealed on followers' attitudes and effectiveness. These associations are unique as they have been robustly tested by empirical research, where the validity of the tools utilized to measure transformational leadership has been established (through multi-factor leadership questionnaire) (Bass & Avolio, 2004; Judge & Picollo, 2004). Findings of observational and experimental research conducted across various situations showed that transformational leadership predicted follower performance and attitude and was generalizable throughout organizational settings.

As for transactional leadership, Bass's (1990) contention of this type of leadership requiring an implied exchange between the leader and the follower remains. Moreover, if the follower acts based on the wishes of the leader, he is rewarded with rewards (tangible or intangible), but if he refuses to perform as directed, he is punished. These transactions concentrate on the followers' self-interest (Bass, 1990). In other words, transactional leaders influence their followers through their legitimate power or position granted by the organization or relevant officials. This is in contrast to transformational leaders who hold their position of authority based on their sincere concern of their followers' success (Kest, 2006). Transactional leaders are inclined to determine their follower's needs and provide them with what they need after they have satisfied certain performance criteria. In contrast to transformational leadership, transactional ones engage followers in a

transactional form of leadership focus by providing them with specific performance aims, feedback when performance falls lower than expected, and rewards when they it is met (Bass, 1998).

The focus of transformational leadership lies on the provision of direction, vision, and confidence to the follower in order to generate the required change (Judge & Piccolo, 2004). This type of leadership is deemed to consist of three forms of leadership (two active forms and one passive form). The first form, known as the contingent reward, is deemed to be an active leadership form. The contingent reward is described by Bass (1990) as one that exchanges rewards for effort, promises reward for good performance, and acknowledges accomplishments. In addition, contingent reward is distinct from transformational leadership in terms of its approach, but it can be effective in encouraging followers to achieve the aims of the team. Several studies (Avolio, Waldman, & Einstein, 1988; Waldman, Bass, & Yammarino, 1990) found contingent reward leader behavior to be positively related to the attitudes and performance of the follower while Kelloway *et al*. (2006) showed contingent reward to be positively related to safety related outcomes.

The second active form, known as management by exception-active, is defined as the process where the leader oversees and watches out for deviation from rule, processes, and expectations and takes the required action to rectify it. It is noteworthy that this form is not a proactive form of leadership but a reactive form where the leader actively identifies deviations. The third form, known as the management by exception, is a passive form of management. It is where the leader waits for the follower to perform badly in order to

take action. In this management form, leaders steer clear of intervening, taking action or making decisions until or unless it is the last recourse (Bass, 1990).

Historically, researchers acknowledged another form of leadership known as the laissez-fair leadership, which is, in essence, the lack of leadership (Avolio, 1999; Bass, 1985; Bass, 1990; Bass, 1998; Judge & Piccolo, 2004). Laissez-faire leaders abdicate their responsibilities as leaders and do not make decisions (Bass, 1990). An individual is essentially placed in a position where leadership is needed, but decides not to undertake any leadership actions (Groom, 2006). Such an individual does not clarify expectations of performance and is not available upon followers' requirement, abdicates leadership responsibilities and steers clear of making decisions (Bass, 1990; Hater & Bass, 1988; Judge and Piccolo, 2004).

Both transformation and transactional forms of leadership have often been distinguished from the laissez-faire form of leadership. Throughout the late 1990s, and the beginning of 2000s, researches dedicated to management by exception-passive form, which used to be considered as a type of transactional leadership, urged for its combination with laissez-faire leadership. These forms are recommended to be combined as they are highly positively associated with one another and negatively associated with other forms of leadership (Avolio, Bass, & Jung, 1999; Den Hartog, VanMuijen, & Koopman, 1997; Hetland & Sandal, 2003).

The resulting form of leadership when both the above forms are combined was labeled as the passive-avoidant leadership, where the contingent reward and management by

exception-active comprise the transactional leadership. However, this change did not last as the most current large-scale validation study clarified that the parsing out of management by exception-active and management by exception-passive and laissez-faire best reflects the entire leadership range (Bass & Avolio, 2004). The changes in the model were ambiguous but it is crucial to understand the changes in the factors employed to define transformational, transactional, and passive avoidant/laissez-faire leadership, as the scholarly literature from the mid-1990s until recently employed various descriptors apart from what has been used in recent studies.

The premise of transactional-transformational leadership deems leadership in terms of contingent reinforcement of followers by a transactional leader or in the case of transformational leadership, leading followers to think beyond their self-interests for the sake of the group (Bass, 1997). According to Bass (1985), transformational leadership is positively associated with perceived group effectiveness more than transactional leadership. Bass (1990a) later associated this to the ability of the transformational leader to be a role model and to encourage and intellectually stimulate his followers. Consequently, this results in organizational culture change (Zohar & Luria, 2004). In addition, Bass, Avolio, and their colleagues and other authors found transformational leadership not to be mutually exclusive to transactional leadership (Avolio, Bass, & Jung, 1999; Bass, 1997, 1998).

While transformational leaders may have a tendency toward transformational behaviors, they also depend on transactional behaviors (Avolio, Bass, & Jung, 1999). Similarly, the

alternative may also be true in that leaders who are leaning towards transactional leadership behaviors may employ transformational leadership methods.

In the context of occupational safety, increasing interest in transformational leadership has been noted owing to the fact that the leading and interacting process in this type of leadership paradigm is more consistent with the values that are related with the provision of a safe workplace environment (e.g., trust, caring, honesty, team cohesion, among others) (Barling *et al*., 2002; Bass, 1990, Groom, 2006; Grubbs, 1999; House & Shamir, 1993; Kelloway *et al*., 2006; Sivanathan, Turner, & Barling, 2005; Yukl, 1998; Zacharatos *et al*., 2005; Zohar, 2002).

Moreover, transformational leaders are those individuals who basically encourage and inspire their followers to realize success and develop their capacity to be leaders. Transformational leaders act in ways that makes them suitable as role models for leaders (idealized influence) and offer inspirational motivation. They also attempt at meeting every one of their follower's needs to facilitate their personal growth achievement and their growth. They coach and counsel them and as such, contribute to their development and the maximization of their potential. Transformational leaders also provide intellectual stimulation, challenge their peers to determine ways and solutions to issues and transform their thinking. A transformational leader drives followers to go against the status quo and challenge their leader's ideas and thinking (Bass & Riggio, 2006).

Significant studies in literature show that organizational leaders have a key role in affecting workplace safety-related attitudes, actions, and culture (Grubs, 1999; Kelloway

et al., 2006; Mullen & Kelloway, 2009; Wiegmann *et al*., 2004; Zohar & Luria, 2004; Zachataros, Barling, & Iverson, 2005). In the context of safety performance, while several studies suggest that transformational leadership aspects are correlated with safety outcomes such as lower injury rates (Barling *et al*., 2002; Mullen & Kelloway, 2009; Zohar, 2002), studies dedicated to the relationship between transformational leadership and improved outcomes are few and far between. Empirical research has revealed that other leadership behaviors may significantly impact safety outcomes and these include benefits from some transactional leadership like contingent reward (Zohar, 2002), exchange of leader and member (Hofmann & Morgenson, 1999; Michael, Guo, Widenbeck, & Ray, 2006; Spinelli, 2006) and adverse impacts from passive leadership (Kelloway *et al*., 2006). Under these potential influencing relationships, there is a need to identify whether or not transformational leadership is a lone variable related to meaningful outcome measures that businesses employ in their evaluation of safety performance such as rates of injury and severity.

Majority of studies dedicated to the evaluation of transformational leadership and its effect on workplace safety has concentrated on cultural (safety climate or culture) outcomes and variables linked with employee perception (e.g., Clarke & Ward, 2006; Groom, 2006; Hofmann & Morgeson, 1999; Kelloway *et al*., 2006; Luria, 2008; Simon & Frazee, 2005; Watson *et al*., 2005; Zohar, 2002; Zohar & Luria, 2004). In this respect, Barling *et al*.'s (2002) model presents the linkage between transformational leadership and culture which influences individual behavior. Moreover, safety culture, as a concept, is a part of corporate culture, where culture represents shared behaviors, attitudes and

values in light of goals. Positive safety culture reflects the association of employee perception of safety and the leader's safety commitment. Safety culture is more often than not, a factor that contributes to accidents (Weigmann, Von Thaden, & Gibbons, 2007).

In a related study, Alahmadi (2010) examined the organizational culture prevalent in Saudi hospitals to determine the level to which it supports patient safety. He revealed specific risks to patient safety in the organizational climate of Saudi hospitals like the frequent medical errors reported. Majority of the respondents (60%) stated that overall patient safety in Saudi hospitals was excellent or very good. His study also revealed that over half of the health professionals working in Saudi hospitals were convinced that management often ignored patient safety issues. The study's major contribution was that leadership is the key to the effectiveness of patient safety initiatives. A climate conducive to reporting errors and effective communication could enhance patient safety and for this, a strong and sensible leadership is required (Alahmadi, 2010).

Attitudes may be a reflection of culture and climate, but operationalizing them into a generalizable paradigm that can be expansively employed is still a challenge. The lack of a general definition of safety culture and safety climate (Wiegmann *et al*., 2004) adds to the challenge in explaining the absolute impact of leadership on them. As investigators attempt at linking ultimate outcome measurements (rates of injury and lost work days) with leadership behaviors, and safety climate and culture as intermediaries, the potential for error heightens. It can be stated that the final test of whether or not leadership behaviors affect safety performance is if the statistical significant difference in safety

performance as measured by a finite and defined outcome measurement can be demonstrated between the many definable leadership behaviors. Researches to date have failed to demonstrate this very aspect. For this, the transformational leadership's direct impact on the outcome measures indicating safety programs effectiveness needs to be explored.

The Multifactor Leadership Questionnaire (MLQ) is a tool employed to measure transformational leadership. It is an instrument that is valuable in the assessment of leadership in various sectors and situations (Avolio *et al*., 1999; Horwitz *et al*., 2008; McAlearney, 2005). The MLQ has also been employed in the context of various enterprises and cultures. Raters or factors used to rate leaders have been developed from several demographic categories, with raters of both genders evaluating female and male leaders and have revealed consistent results. The MLQ's reliability and validity have been proven in many situations (Bass & Avolio, 2004). Moreover, MLQ has been employed in many academic studies and has been proven to be dependable in the identification and differentiation of leadership methods (Rowold & Heinitz, 2007).

In relation to the above, the creation of the six-factor leadership model has its basis on the study involving 198 U.S. Army field grade officers, who were rated superior officers through the first iteration of the MLQ Form 1. Six factors comprising three transformational, two transactional and one passive laissez-faire factors, were identified from the initial analysis (Avolio, Bass, & Jung, 1999). These six factors include charismatic-inspirational leadership, intellectual stimulation, individualized consideration, contingent reward, management-by-exception, and laissez-faire leadership.

Bass (1985) further provided evidence for two higher-order factors namely active and passive leadership. Following his initial study where MLQ was used, other researchers began using the instrument and identifying drawbacks. Majority of researchers claimed that the transformational leadership components could not be empirically recognized from one another. Accordingly, Bass and Avolio (1993), Den Hartog *et al*., (1997), Howell and Avolio (1993), and Yammarino and Bass (1990) motivated Avolio, Bass, and Jung (1999) to conduct an assessment of the various models and the evaluation of inter-correlations among the previously listed factors. They concluded on the basis of 14 factors, where n = 3786, that a six factor model best determined the leadership continuum in the theory of transformational leadership.

An issue highlighted by several authors who employed MLQ survey is whether or not the transformational leadership's components should be deemed independent of contingent reward leadership (Avolio, Bass, & Jung, 1999). As such, Hater and Bass (1988) further refined the MLQ survey by postulating management-by-exception's categorization into two sub-factors namely active and passive. Hence, this led to the development of the MLQ Form 5X to handle issues attributed to its prior versions. Specifically, Avolio, Bass, and Jung (1999) highlighted potential issues concerning item wording, lack of discriminant validity among specific factors of leadership, and the inclusion of behaviors and attributes in the same scale as the reasons for the MLQ modifications. The MLQ 5X reliability and validity was initially based on an original set of 9 factors where n = 2154 individuals evaluated the target leaders. The model was later extended to cover nine instead of the six factors originally proposed by Bass. However, later studies drove some

researchers to consult the six factor model, although most current large-scale validation study clearly advocates the nine factor model as the most appropriate as it best shows the entire leadership range (Bass & Avolio, 2004).

The most current stream of validations and analyses includes the original data base of 56,749 rates from around the globe and from various industries who conducted an evaluation of the perceived leadership behaviors of a total of 8,238 leaders and additional data gathered until 2003 (Avolio & Bass, 2004). Avolio and Bass's (2004) proposed scale titles and typical items of transformational leadership are: idealized influence/attributed charisma, i.e. "instills pride in being associated with him/her" with four items; idealized influence/charismatic behavior, i.e. "talks to us about his/her most important values and beliefs" with four items; inspirational motivation, i.e. "talks optimistically about the future" with four items; intellectual stimulation, i.e. "seeks differing perspectives when solving problems" with four items; and individualized consideration, i.e. "treats each of us as individuals with different needs, abilities and aspirations" with four items. On the other hand, the scale titles, typical items, and internal reliabilities of transactional leadership are: contingent rewards, i.e. "makes sure that we receive appropriate rewards for achieving performance targets" with four items; management-by-exception (active) i.e. "focuses attention on irregularities, mistakes, exceptions and deviations from standards" with four items; and management-by-exception (passive), i.e. "fails to intervene until problems become serious" with four items. The continuum of leader behavior is completed by non-leadership in the MLQ where laissez-faire is represented by, "is absent when needed" with four items.

To summarize the above explanation, the MLQ, developed by Avolio and Bass was later refined in its latest version MLQ Form 5x. The refined version covers the full range of leadership (transformational, transactional, and laissez-faire). This version was employed in the present study as it has been extensively developed and validated and it is considered among the most effective instruments employed in the leadership styles evaluation. The items reliability for every leadership factor scale ranged from 0.74 to 0.94 (Avolio & Bass, 1995) and is over the standard reliability boundary of 0.70, as recommended by Fornell and Larcker (1981).

The latest MLQ version addresses the suggestions and criticisms provided by several authors and hence, it is considered more extensive in comparison to the initial version. The current form's effectiveness is validated by studies in various cultures (Asian and European) and therefore, the current study adopted the same items to conduct the measurement of the study's antecedent variable (i.e. transformational leadership).

2.4.2 Transformational Leadership and Climate

Leaders create a workplace climate that largely depends on the leadership behavior they employ the most. The premise that leaders influence the organizational climate is not a new one. For several years, organizational researchers have highlighted the crucial role of leadership in creating climate perceptions. Early climate studies investigated the role of leadership style in the creation of various climates and how they influence the attitudes and behaviors of the group members (LewinLippitt & White, 1939). Current research explained the effect of leadership and management practices upon perceptions of climate

(e.g., Aarons *et al*., 2003; Dkk & Kumar, 2003; Ekvall, 1997; Ekvall & Arvonen, 1984; Fox, 1990; Kozlowski & Doherty, 1989; Schneider, 1980; Schneider & Bowen, 1985; Schneider & Snyder, 1975; Joyce & Slocum, 1984).

Along the same line of contention, James and James (1989) stated that leaders are a primary source of cues upon which followers create perceptions of climate. Therefore, when leaders are consistent in their practices, a behavioral pattern arises which directs the attention of the employees to the leader's top priorities. This in turn shapes the climate perceptions that reflect this priority (Dragoni, 2005). According to Bandura (1986), leaders drive followers' climate perceptions via social learning process. In this process, followers often note their leaders' actions and behavior and interact with them for understanding and interpreting the group's work practices. Bandura (1986) further added that leaders display appropriate behavior, provide feedback to followers on their performance, and acknowledge followers who display appropriate behavior. Hence, the leader's actions are a source of cues concerning acceptable behavior, expectations and appreciated work of employees, which in invariably, shape their climate perceptions. Leaders may also affect these perceptions by relaying their assumptions and employing symbolism (Ashforth, 1985). In an apt description used by Naumann and Bennet (2000), leaders are "climate engineers".

Among the few empirical studies that have investigated the effect of transformational leadership on climate, most of them focused on the indirect impact of transformational leadership upon follower outcomes via their impact on climate. Specifically, Nemanich and Keller (2007) reported that transformational leaders influenced their followers' job

satisfaction and acceptance of acquisition via the climate created by them – a climate with clarified goals that is conducive to creative thinking. Similarly, Barling, Loughlin and Kelloway (2002) revealed transformational leaders to be indirectly related to subordinate safety behaviors via the climate they created.

In the context of health care, leaders have to monitor the organizational environment in an attempt to create a surrounding that is susceptible to the provision of nursing care (Roussel, Swansburg, & Swansburg, 2006). Based on the viewpoint of evidence-based practice, the five main management practices in health care are balancing the efficiency and effectiveness scale, developing and maintaining trust, monitoring the process of change, enabling followers to contribute to work design and flow, and fostering a learning organization (Roussell *et al*., 2006). Accordingly, leadership is responsible in creating the suitable climate within the organization.

A significant portion of the literature in the subject highlights the critical role of leadership on the performance and profitability of the organization (e.g., Bass, 1990; Zhu, May, & Avolio, 2004) and the importance of health care leaders to convince their management teams and staff to feel accountable for enhancing patient safety (Leape *et al*., 1998). In fact, the World Health Organization (WHO, 2006) acknowledged that without leadership commitment to the patient safety movement, failure may ensue. This is because leadership decisions are final and they create interconnections among the many health care organization's aspects including patient safety. With leadership commitment to patient safety, a notable decrease in negative incidents to patient safety occurs (Frankel *et al*., 2005; Mohr, Abelson, & Barach, 2002). Researchers also noted

that positive manager's practices define employee priorities through their actions, goals and focus and these in turn, encourage employees to improve their work pace, establish workloads, rewards, punishments, and pressures arising from production and safety (Grojean, Resick, Dickson, & Smith, 2004).

Moreover, leaders stress on safety by highlighting certain safety behaviors and belittling others. Employees observe safety through their leader's perception. Those who work in organizations under supervisors who are committed to safety display manager commitment and acknowledge the importance of safety (Walston, Al-Omar, & Al-Mutari, 2008). Leadership also reduces the existence of adverse occurrences (Richardson & Storr, 2010). It has been established that an environment that is conducive to safety is an outcome of the leader's commitment to activities and behaviors attributed to safety, and of the policies' facilitation of effective behaviors (Waltson, Al-Omar, & Al-Mutari, 2010). Because patient safety stems from the combined directives, behaviors and actions developed by managers and interpreted and employed by physicians, the improvement of service and eradication of obstacles impeding success and improvement call for manager and physician efforts (Walston, Al-Omar, & Al-Mutari, 2008).

The leadership-patient safety relationship is a matter of accountability and responsibility and is considered a role that leadership takes up to guarantee patient safety (Goeschel, Wachter, & Pronovost, 2010). This responsibility is facilitated via different channels; according to the social exchange theory, while exercising leadership, short-spans are more suitable (Squires, Tourangeaou, Laschinger, & Doran, 2010) as it allows the leader to form quality relationships with followers which will be reciprocated by positive

behavior (Squires, Tourangeau, Laschinger, & Doran, 2010). In a U.S. study conducted by Frankel *et al*. (2005), the relationship between leaders and their characteristics and patient safety practice was examined. They found that leaders were expected to be knowledgeable, organized; one that supports a structure which allows acknowledgement and error reporting, and that encourages open discussion concerning negative events in order to minimize their repetitive occurrence. On the other hand, when nursing leaders have an extensive span of control, greater workload and early retirement caused by stress ensue (Stewart & Usher, 2010). Furthermore, findings that advocate the transformational leadership-safety relationship reveal that transformational leadership is positively related with safety initiatives (O'Dea & Flin, 2000), is a top priority attributed to safety (Zohar 2002), is negatively associated with minor injury rate (Zohar, 2002) and micro accidents (Zohar, 2000), and is indirectly linked with injuries (Barling *et al*., 2002).

In sum, the above studies support the premise that transformational leadership has a major role in safety performance. Moreover, Alharbi (2012) documented that transformational leadership was better compared to transactional or other leadership types. He added that leadership behavior affects organizational commitment, which shows that innovative leaders are capable of motivating employees' commitment and consequently improve the performance of the organization.

On the basis of the above discussion, there exist many reasons for the appropriateness of transformational leadership in enhancing patient safety in a high-performance work system. Firstly, the effectiveness of transformational leadership is supported by many studies (Bass, 1998). Secondly, the four factors of transformational leadership namely

inspirational motivation, idealized influence behavior, intellectual stimulation, individual consideration along with idealized influence attributes, work in combination to enhance safety performance (Barling *et al*., 2002). Thirdly, research shows that transformational leadership can be taught to managers (e.g., Barling, Weber, & Kelloway, 1996).

In the present study, two interlacing concepts are considered. First, the literature reviewed shows that HPWS is a relatively new method reflecting the shift from the traditional HR to a new one. In other words, it is a transformation phase. Taking this into consideration, the characteristics of a transformational leader – primarily conceptualized around a leader who is capable of urging followers towards transforming their practices to achieve a specific vision and organizational objectives – are consistent with the notion of HPWS, as the success of HPWS depends on the existence of a transformational leader. Hence, the current study concentrates on this specific type of leadership as an antecedent of HPWS.

Research dedicated to hospital leadership is confined to quantity and scope and to the developed world (Stewart & Usher, 2010). A nursing leader's specific roles and tasks in guaranteeing organizational climate and patient safety have not been fully clarified (Tregunno *et al*., 2009). Additionally, it is the organizational leader who chooses the nature of the system to be employed that ensures its implementation (Pfeffer, 1998) and helps in the selection of the organizational outcomes. Despite this fact, most organizations overlook the use of systems in high performance work systems (Ichniowski, Kochan, Levine, Olson, & Strauss, 1996), because using such systems would involve going contrary to the norm, a challenge that requires strong leadership.

Hence, the current study focuses on transformational leadership as an antecedent of high performance work systems and effective reporting systems.

2.5 High Performance Work Systems

High performance work systems (HPWS) is a term synonymously used for many names in literature such as high-involvement systems (Lawler, 1992), flexible work systems and high commitment management (Arthur, 1994; Wood, 1996; Van Buren & Werner, 1996), as well as innovative/alternative work practices (Godard, 2001).

HPWS was defined by Nadler, Gerstein, and Shaw (1992) as an organizational architecture that brings about a fit to generate high performance in light of effective response to customer requirements and demands and opportunities found in the environment. Meanwhile, Huselid, Jackson, and Schuler (1997) defined it as a consistent set of policies and practices that guarantees the contribution of the firm's human capital towards the objectives of business. Similarly, James *et al*. (2008) defined HPWS as a specific combination of HR practices, work structures, and processes that enhances employee knowledge, skill, commitment and flexibility.

HPWS can also be defined as the employment of mutually reinforcing HRM practices in a systematic manner which emphasizes the selection of qualified employees, development of their skills, and organizing work so that they have the autonomy to solve issues in a creative way, and the utilization of reward systems that encourage employees effective performance to achieve organizational aims (Harley, Allen, & Sargent, 2007). Through the above definitions, HPWS can be considered as HRM practices that

guarantee superior managerial outcome and employee work experience (Harley, Allen, & Sargent, 2007). Despite the similarities among compartments within HPWS and HR practices, there is significant difference in the system and approach. For instance, HR practices are disseminated over work and tasks, while HPWS are combined compartments which function together to achieve the objective of the organization of any size (Cotton, 2004). The present study defines HPWS as HR systems that include the above interrelated practices as defined by Datta *et al*. (2005).

The objective behind HPWS is the creation of a system where workers control and monitor themselves (Altman, 2006). Many empirical studies were conducted on the effectiveness of HPWS in enhancing organization performance and most of them reached the conclusion that organizations adopting HPWS display better performance compared to those that adopt traditional management practices (Altman, 2006). HPWSs help to bring about superior employee autonomy, satisfaction and performance as they concentrate on employees' work and responsibility (Harley, Allen, & Sargent, 2007). The HPWS concepts are displayed in a variety of formal training programs, employee empowerment and performance-based compensation and organizational performance (Vogus, 2004). It is also expected to entail versatile job tasks, strict and selective staffing, performance appraisal based on merit and development and extensive benefits (Takeuchi, Wang, Lepak, & Takeuchi, 2007).

An HPWS basically functions through various management tools like equipping employees with the required skills, disseminating crucial information to them, and encouraging them to perform better and thus developing an employee team that is greatly competitive, capable and robust (Guthrie, Spell, & Nyamori, 2002). In the context of a

traditional management system, workers are considered as unthinking agents reflecting values and norms laid down by the owner or the manager (Altman, 2006). A new theoretical framework for management also emerged along with HPWS that concentrates on the notion of deep owner motivation (Altman, 2006). Deep owner motivation refers to motivation felt by employees who are owners rather than agents of the organization in more than a financial/legal sense. Employees who perceive this type of motivation experience high psychological energy when their organizations equip them with the chance to realize self-actualization. This occurs when the employee is linked with the organization in meaningful way through a common destiny, mission, core values and spirit (cited by Altman, 2006).

In light of prior studies, the HPWS characteristic can be summarized as a work organization that offers employees the chance of participation in decision making and human resource practices that provide the workforce with skills as well as incentives for effective participation (Bailey & Merritt, 1992). However, three conditions must be satisfied for innovative HRM practices to produce enhanced economic performance (MacDuffie, 1995). These conditions are: employees should be knowledgeable and skillful, HRM practices should encourage employees to employ their knowledge and skills when contributing to discretionary effort, and finally, discretionary effort must allow the firm to business and production goals.

In a related study, Murphy (2006) noted that the most effective HPWS system is the one that has a specific type of universality where its components correspond to its internal

mechanism. Murphy (2006) stated that such a universal HPWS system is able to maximize the intangible human capital value of the organization and contribute to the economic value. Several studies (Batt, 2002; Boxall & Purcell, 2002; Lepak *et al*., 2006) claimed that HPWS may affect organizational performance by enhancing the employee's ability and motivation and by offering them opportunities to perform. This requires future research to examine mediating factors that reflect ability-motivation-opportunity elements simultaneously which could shed a deep insight.

Although literature dedicated to this field is increasingly expanding, theorists have brought attention to the ambiguity in the key mediating factors that relate the use of HPWS to the performance of the firm (Becker & Gerhart, 1996; Becker & Huselid, 2006; Chadwick & Dabu, 2009; Delery, 1998; Takeuchi *et al*., 2007). In sum, although authors have sufficiently showed that HPWS is effective, they are still unclear of about the dynamics of the relationship.

Previous studies conducted to investigate the HR practices-organizational performance relationship (e.g., Arthur, 1994; MacDuffie, 1995; Youndt, Snell, Dean, & Lepak, 1996; Zacharatos *et al*., 2005) with the exception of others (e.g., Batt, 2002; Liao & Chuang, 2004; Liao, Toya, Lepak, & Hong, 2009; Sun, Aryee, & Law, 2007) focused on the manufacturing sector although the service sector contributes to GDP and drives the economy in many nations. The current study attempts to contribute to the extant HR literature by investigating the effect of HPWS mechanism in the context of a service sector. It is important to understand the way HPWS operates in the service sector as the features of such sector are distinct from those of the manufacturing sector (Batt, 2002).

Based on management's perspective, the enhancement of employee's knowledge, skills and abilities (KSAs) will urge their use of such KSAs for the benefit of the organization (Combs, Liu, Hall, & Ketchen, 2006). The outcomes of this process include higher job satisfaction, lower employee turnover, greater productivity, and superior decision making, which all assist in improving the organizational performance (Combs, Liu, Hall, & Ketchen, 2006).

There is no consensus as to what constitutes the most optimum HR practices or high performance work practices (Zacharatos, Barling, & Iverson, 2005) and the lack of such best practices lead to great gaps in the way HRM practices are operationalized and measured. This makes it challenging to compare the findings of various studies (Ichniowski *et al*., 1997; MacDuffie, 1995). The sets of suitable HRM practices have been attracting increasing acceptance in the quest to realize the synergistic effect. In fact, the index method was created based on the mean of standardized items in terms of the HR policies intensity, and is basically deemed as high performance work practices (Huselid, 1995; MacDuffie, 1995; Youndt *et al*., 1996). It is important to combine the suitable HRM practices in order to realize the synergistic effects that result from the interactions among practices (Ichniowski *et al*., 1997; MacDuffie, 1995).

These practices characterizing HPWS are mainly linked to HRM performance and are usually used to measure HPWS; it include the following HR aspects: recruitment and selection, pay for performance and incentive-based compensation plans, thorough performance appraisal processes, participation, and training in generic as well as company-specific skills (Datta *et al*., 2005; Huselid, 1995; Takeuchi, Chen, & Lepak,

2009). Therefore, it had been asserted that HPWS refers to a specific combination of HR practices, work structures, and processes that optimizes employee, knowledge, skills, commitment and flexibility (James *et al*., 2008).

However, the effects of bundling innovative HR practices were examined by various studies with inconsistent results. Specifically, MacDuffie (1995), Pil and MacDuffie (1996), Ichniowski, Shaw and Prennushi (1997), Becker and Huselid (1998) and Appelbaum *et al*. (2000) showed the complementarities and claimed that bundles, systems or configurations of coherent practices can be determined and they significantly impact firm performance more than individual practices. Contrastingly, Delaney and Huselid's (1996) findings rejected the notion that complementarities among HRM practices improve the performance of the firm. Others found that firms that adopted a coherent set of HR practices would display optimum performance although the relationship may not be linear. For instance, Godard (2001) revealed a moderate level of alternative work practices on behavioral and attitudinal outcomes. At a greater level of adoption, these associations decreased in magnitude and obtained a negative sign owing to the increasing workload and stress entailed. This indicates that the marginal returns started declining and may even turn negative upon reaching a specific adoption level.

In the past 20 years, HPWS has attracted a great deal of research attention in various settings and industries (Delaney & Huselid, 1996; Lawler III *et al*., 1995; Wood & de Menezes, 1998). These studies are based on the premise that forming a working environment that reinforces internal and external needs and expectations results in superior firm performance.

Many studies have investigated the effects of HR systems or bundles of interrelated HR practices, on firm performance. Scholars differ in the operationalization employed in their study of HR systems (Lepak, Liau, Chung, & Harden, 2006), but there is significant commonality among them in light of their focus on HR practices that is geared towards acquiring and developing talent, information sharing, participation, fairness and equity and the consistency between interests, employees and management (Cappelli & Nuemark, 2001).

More importantly, the managerial practices that form HPWS are subjected to an ambiguous variety of definitions and assertions as indicated by Wood (1999). This diversity is provided by Becker and Gerhart (1996) in a table that lists HPWS studies conducted in the U.S. These studies list as high as 11 and as few as 4 practices, with no common practice common to five of the studies. Sometimes there is disagreement as to whether or not a practice, like variable pay, positively/negatively impacts performance. In addition to this theoretical dispute, more socio-cultural variations in HPWS practices have to be addressed (Chow, 2001). For instance, employee grievance procedure, an HPWS practice, is considered by Huselid (1995) as a high performance indicator in the context of the U.S. is a legal requirement in the U.K. Hence, this is hardly a practice that distinguishes high performers. Boselie *et al*. (2001) also demonstrated that some practices that are considered high performing in the U.S. are incorporated to the institutional requirements in other countries. Hence, they are known as table stakes rather than a source of high performance (Boxall and Purcell, 2008).

Moreover, underpinning cultural assumptions are more challenging as some practices that may work efficiently in the West are understood in a different, much less positive manner in a country entrenched with individualism and hierarchical culture (Trompenaars & Hampden-Turner, 1997). Therefore, proposed approaches to developing the independent variable in HPWSs, wherein researchers combine their perceptions of 'best practices' regardless of a context, are basically contentious. In addition to this, work systems and employment practices differ throughout occupations, hierarchy, workplace, industry and societal contexts (e.g., Appelyard & Brown, 2001; Lorenz & Valeyre, 2005; Kalleberg *et al*., 2006). Any claim in literature of some type of general consensus concerning systems of best practices is a false claim, and arguments that a specific set of practices is high-performing are not logical (Bryson *et al*., 2005; Marchington & Grugulis, 2000; Wood, 1999).

The three distinct and fundamental elements of strategic HRM are heightened employee commitment and motivation, a better collective human resource pool that is skillful and more effective behavioral functions like information sharing and coordination (Herdman, 2008). This explains why strategic HRM is also known as a high commitment system (Herdman, 2008). It is important to begin the investigation from the traditional HRM concepts to understand HPWS. Approximately ten years ago, the evolvement of HPWS began in a quest to enhance employee input for overall performance development. HRM then began to be referred to as HPWS from the middle of the 90s until to date (Harley, Allen, & Sargent, 2007). This concept evolved with novel challenges in the HRM systems in the context of health care. These primary challenges are size of work force,

composition and distribution, training issues, migration, level of economic development in the country and the country's socio-demographic, geographical and cultural elements (Kabene *et al*., 2006). Harley, Allen, and Sargent (2007) stated that HPWS evolution can be examined back to traditional management point of view to an employee-centered new vision. This is the reason why traditional management is perceived as control-oriented, while HPWS is perceived as involvement-oriented (Altman, 2006).

HPWS measures have included practices that are associated with structured and extensive approaches to the following HR aspects: recruitment and selection pay for performance and incentive-based compensation plans, thorough performance appraisal processes, participation, and training in generic as well as company-specific skills (Datta *et al*., 2005; Huselid, 1995; Takeuchi, Chen, & Lepak, 2009). Regardless of the consistency in terminology, these studies have always related varying HPWS operationalization's to several common factors including productivity, voluntary turnover, growth, innovation, survival, profitability, customer service and performance metrics at firm-level (Arthur, 1994; Batt, 2002; Cappelli & Neumark, 2001; Datta *et al*., 2005; Delaney & Huselid, 1996; Delery & Doty, 1996; Guthrie, 2001; Huselid, 1995; Huselid & Day, 1991; Huselid, Jackson, & Schuler, 1997; Ichniowski & Shaw, 1999; Macduffie, 1995;, Messersmith & Guthrie, 2010; Way, 2002; Welbourne & Andrews, 1996; Youndt, Snell, Dean, & Lepak, 1996).

Regardless of the variance in certain dimensions included as high commitment or high performance HRM practices, conceptual as well as empirical work had a tendency to concentrate on HRM practices that are linked to performance appraisal/management,

training, decentralization, participatory mechanisms, employment security, recruitment/selection, and compensation (Pfeffer, 1998). Some appropriate changes have been done to correspond to specific settings; for instance, Leggat, Bartram and Stanton (2011) did not include compensation as the payment system in the Australian public health care as it is not related with performance. As a similar situation applies on the public health care system in Saudi Arabia, this study will exclude compensation from the HPWS dimensions. Pfeffer (1998) stated that decentralization is an HPWS dimension which reduces administrative expenses and to assess firm financial performance (Guthrie, 2001; Huselid, 1995).

Consistently, Messersmith and Guthrie (2010) gauged these practices on a group of HRM practices linked to selection, training, performance management, compensation and participation that are developed to attract, retain and motivate workers. In this context, it is noteworthy that the Saudi health care system is a non-profit system that provides health services free of charge (Almalki *et al*., 2011). The underlying premise of HPWS is explained in detail in the following sub-sections.

2.5.1 Hiring Practices

Recruitment is defined as the process through which an organization searches for potential employees who could satisfy specific criteria to achieve goals – these criteria are largely linked to their knowledge, abilities and skills (De Cieri & Kramar, 2008). In this situation, organizations having inadequate analysis for their job needs or those in need of filling vacancies in a short time, often fail to discriminate when selecting suitable

applicants (Carless, 2007). This failure often turns out to be costly and results in increased turnover rate (Chan & Kuok, 2011). From the perspective of the applicant, owing to the inability to gather enough information concerning jobs from alternative organizations, they sometimes form their opinion on erroneous signals (Chan & Kuok, 2011). Employee retention and sustainability are influenced by various sophisticated HRM infrastructure (Chew, 2005; Raghuram, Bird, & Beechler, 1993).

Both rigorous recruitment and selectivity are viewed as effective mechanisms for HPWS tool (Combs *et al*., 2006). Selectivity refers to the expansiveness of selection process employed by the firm (Naqvi & Nadeem, 2011). It is described as the systematic process owing to which the firm can introduce suitable knowledge, skills and abilities from the beginning (Combs *et al*., 2006). The selection process may also be confined to selected individuals who display organizationally crucial values that are required to develop long-term employee commitment to the organization (Herdman, 2008). Selectivity also entails employing staff that possess high basic skills and academic qualifications (Batt, 2002) as this would develop a workforce that is capable of continuous learning (Batt, 2002). Continuous learning is important to tackle arising current information stemming from ongoing change (Batt, 2002).

Moreover, searching for the right talent for a specific position so that such a talent fits into the organizational culture and climate is a good recruitment practice (Turner, 1991). This practice is geared towards minimizing the recruitment cost through the efficient identification of the education, training and development of employees (Vlachos, 2009). In addition, hiring is also related to the process of hiring qualified people who are

operational experts and who are capable of contributing to the competitive edge of the firm (Paelmke, 2007). A standard selection and recruitment procedure for an open position is required and this process outcome should be relayed to the concerned individuals (Paul & Anantharaman, 2003). In this regard, Woods, Jang, and Erdem (2006) claimed that HR management or any individual who is responsible to work on his behalf should outsource, select and recruit employees in order to lay down the policies of recruitment and selection. According to Shuster (1986), selecting is an important practice that facilitates the achievement of the firm goals. Collins and Clark (2003) supported this by arguing that effective hiring practices enhance the productivity and performance of employees. Zhnet *et al*. (2004) focused on the Chinese industrial enterprises in light of the country's hiring practices and the influence of the dynamic business environment on it. Their results supported the presence of a relationship between the hiring practices of the firms and the dynamic business environment. Specifically, the business environment called for adjustments to be done in the different business aspects (technological, economic, social and cultural aspects). Along the same line of study, Huselid (1995) investigated the impact of high performance work practices on firm performance among 3502 publicly quoted firms in the U.S. through the use of a survey. The study findings showed that high performance work hiring practices were statistically and economically associated with firm performance, in terms of turnover and productivity. With regards to safety, hiring practices cover the selection of employees who are capable of understanding and creating awareness of the safety process and its significance in the organization (Eckhardt, 1996).

In another related study, Hussain (2009) studied factors contributing to the effective occupational safety measures implementation in the Malaysian manufacturing sector among 150 employees. He found that hiring practices facilitated safety achievements. The safety culture in Malaysian companies was also examined by Ali *et al*. (2009). However, no significant correlation was found between reduced injury rates and hiring practices. They attributed the result to the poor hiring practices that are followed by the Malaysian firms. Also, Vredenburght (2002) addressed management practices and the low rate of hospital injuries. He highlighted a significant positive relationship between hiring practices and decreased injury rates.

To summarize, hiring practices could play a key role in organizations and although prior studies that addressed the impact of hiring practices on safety performance are few and far between, majority of them revealed that hiring practices impact job and employee performance. In other words, hiring suitable worker for the right position can improve workplace task completion.

2.5.2 Employee Training

Following the selection and recruitment of employees, their knowledge, skills and aptitudes can be enhanced by providing them with training, job design and compensation along with skill development (Combs *et al*., 2006). This is important as the under-utilization and under-performance of employees skills often happen in organizations (Combs *et al*., 2006). Therefore, they need to improve their KSAs and maximize their use to provide maximum results (Combs *et al*., 2006). Moreover, training is primary related

to the offered opportunities (Naqvi & Nadeem, 2011). Specifically, both short and long-term effects of training are important. In short term, training affects human capital outcomes while the long term effects contribute to the development of employee motivation and commitment (Herdman, 2008). According to Vogus (2004), training programs positively influence organizational performance while Marquis and Huston (2009) contended that training is a crucial factor in decreasing medical errors. The final result of training that a firm invests in is the creation of firm-specific human capital (Batt, 2002).

The World Health Organization (WTO) published the 'Multi-professional Patient Safety Curriculum Guide" in October 2011, stressing the requirement for education and training of all health care workers regarding the priority of the concepts and practices of patient safety (WHO, 2011). Mwachofi *et al*. (2011) in their study carried out in Saudi Arabia where they found nurses training to significantly enhance patient safety.

Training significantly contributes to explaining management practices catered towards employee's performance enhancement (Poulston, 2008). Training is generally described as the knowledge, skills and competencies acquisition through vocation and practical teachings (Cooper, 2000; Harris, Guthrie, Hobart, & Lundberg, 1995; Noe Hollenbeck, Gerhart, & Wrigth, 2006; Ruwan, 2007). This notion is consistent with the one proposed by Osterman (1995), who contended that training results in the employees' problem-solving skills. In other words, training programs assist organizations in setting goals, achieving goals and leveraging professional skills (Cabrera, Fernaud, & Diaz, 2007; Geller & Williams, 2001). Prior studies showed that training can lead to positive work

results like employee positive performance and productivity (Conti, 2005; Dearden, Reed, & Van Reenen, 2006; Ichinowski, Shaw, & Prennushi, 1997; Lee & Lee, 2007; Schaffner, 2001), low turnover (Akhtar, Ding, & Ge, 2008; Kundu & Kumar, 2006), job satisfaction (Bhatti & Qureshi, 2007; Ballot, Fakhfakh, & Taymaz, 2006; Bradley *et al*., 2004). In terms of safety and health, employee training hinges on the work nature as it has a key role in specific tasks completion (Young, Brelsford, & Wogalter, 1990). Similarly, Barling, Kelloway, and Iverson (2003) claimed that training enables employees to acquire better competencies for workplace control and safety tasks achievement. Additionally, training assists in decreasing hazards and enhances the ability of the employees to handle unpredictable problems (Diaz-Cabrera, Hernandez-Fernaud, & Isla-Deiaz, 2007; Noe, 2005; Roughton, 1993).

Cohen (1995) demonstrated that the degree of perceived danger increases in compliance to warnings and instructions. Hence, employees have to be trained effectively in order to enable their identification and reaction to hazards related to their workplace. In each organization, occupational safety and health program forms the core to the successful accident prevention strategies and thus, training can be considered to enhance the skills, knowledge and attitudes of the employees (Varonen & Mattila, 2000).

Moreover, in order to enhance the safety and health level among employees, it is crucial for organizations to lay down systematic, extensive safety and health training plan for the new staff especially when training them to assist in their smooth familiarity with safety, health and systems of quality (Cohen & Jensen, 1984). This argument is also supported

by Carder and Ragan (2003) who highlighted that safety training and health training are the main effective safety program components.

In a related study, Vinodkumar and Bhasi (2010) examined the impact of safety management practices upon safety performance in the context of Kerala, India. They showed a significant and positive association between the two variables. They also called for the need of safety training in the workplace and indicated that effective safety training programs affected worker skills, safety knowledge and safety attitude. Effective safety training was also found to have a significant correlation with enhanced rates of injury.

Moreover, Lin and Mills (2001) revealed that clear policy statements and safety training both have a key role in decreasing the rates of accident and injury. Along the same line of contention, Farooqui, Arif, and Rafeeqi (2008) carried out an examination of safety performance in Pakistan's construction industry. They distributed self-administered questionnaires for data collection in 27 construction sites. They revealed that training is a core factor on safety performance and recommended that construction workers obtain effective job-related safety and healthy training and career development programs.

Another related study was conducted by Sgourou, Katsakiori, Goutsos, and Manatakis (2010) to investigate the practical characteristics-safety performance relationship. They revealed several activities linked with preventing occupational injuries and ill-health, such as safety training. Also, Tinmannsvik and Hovden (2003) found that safety training positively impacted predictions of accidents. In this regard, Vredenburgh and Cohen (1995) revealed that the degree of perceived danger maximized warnings/instructions

adherence. They also found a significant positive association between decreased hazards and employee training. Others (Cohen, Smith, & Cohen, 1975; Lee, 1998; Ostrom, Wilhelmsen, & Daplan, 1993; Smith, Cohen, Cohe, & Cleveland, 1978; Tinmannsvik & Hovden, 2003; Zohar, 1980) reported that firms having lower rates of accident were also distinct in their good safety employee training programs. Along the same line of contention, a study conducted by Abdullah *et al*. (2009) showed that training was significantly and positively related to safety satisfaction in Malaysian public hospitals.

Additionally, Arboleda, Morrow, Crum, and Shelley (2003) investigated the relationship between management practices and safety culture in the context of U.S. trucking industry. The study covered individual-level responses gathered from 113 drivers, 98 dispatchers, and 109 safety directors and it employed the safety performance data in Safe Stat in order to achieve variation in safety performance and practices. The study highlighted that driver training significantly predicted the respondents' culture perceptions and that training was a primary contributor to the overall safety culture perceptions, particularly owing to the drivers' feedback of their own training. Meanwhile, Carolyn, Lehmann, Haight, and Michael's (2009) study looked into the relationship between safety training and tolerance of risk among 53 workers employed in the surface mining industry in the U.S. They found safety training to be crucial in transforming safety-related attitudes and behaviors. No relationship was revealed between safety training quantity and workers' tolerance for risk.

Burke *et al*. (2011) investigated the way safety training and workplace dangers affected safety knowledge and safety performance development in the U.S. They revealed that

training was highly effective in encouraging safety knowledge and safety performance and that training methods are needed for knowledge acquisition and enhancement of safety performance. The relationship between occupational safety and high-performance work systems was also investigated by Zacharatos *et al*. (2005). Their study involved 138 safety directors working in a human resource firm. Their findings showed a significant association between training and high performance and that workers' effective training could enhance the degree of occupational safety, and ultimately leads to high performance.

2.5.3 Employment Security

Another HPWS aspect that may contribute to performance outputs is employee security (Combs *et al*., 2006). Employee security refers to the level of security perception harbored by the employees (Naqvi & Nadeem, 2011). As an employee-centered approach in obtaining competitive position in the market, HPWS primarily focuses on employee safety (Zacharatos, Barling, & Iverson, 2005). Additionally, HPWSs may also work to guarantee employee safety and this occurs by relaying emotional security and trust to the employees working in the organization (Zacharatos, Barling, & Iverson, 2005).

Employment security's significance lies in its critical effect on work-related results (Yahaya *et al*., 2010). For instance, a great level of job security reflects that the employee has a low chance of being fired. It is the most critical elements that impacts job performance (Ashford, Lee and Bobko, 1989; Borg and Elizur, 1992), which has

encouraged studies to link job insecurity with psychological responses like low self-esteem, and consequently, low performance (Wiley, 1997).

The health care field is considered among the most dynamic developing industries in the globe regardless of the current economic situation as the health care requirement among people is not dependent on the economic situation (Van Den Tooren & De Jonge, 2008). As for the nursing profession, it is among the most secured jobs and nurses who have to leave their place of employment may find other jobs in other health care institutions easily (Wu, Zhu, Wang, Wang, & Lan, 2007). However, different nurses have varying levels of security in terms of their employment; for instance, practical nurses have high levels of job security in comparison to their counterpart colleagues. On the contrary, nurses who are employed in a non-hospital setting have less job security in comparison to those who are hospital employees, specifically in government-owned hospitals (Sperlich *et al*., 2009).

2.5.4 Employee Participation

Employee participation refers to the involvement of employees and it is a phenomenon that tackles the behavior-oriented process that drives workers, individuals, groups or teams in an upward communication flow with regards to decision-making process (Khan, 2010; Vinodkumar & Bhasi, 2010). From the point of view of management, employee participation is described as the employees' ability to influence management or work process in a firm (Juan & Andrew, 1978). Hence, employees can influence the decision making of management in different levels of firm hierarchy (Hem, 1980).

Participation of employees is significant for any organization as it has a key role in the achievement of the organizational goals. This explains why empirical research that addressed the influence of employee participation on employee performance has been done extensively (Goetsch, 2002). For instance, Marwat, Qureshi and Ramay (2007) examined the relationship between employee participation and performance in Pakistan telecommunication sector in Islamabad. They found participation was positively correlated with performance. Others (Collins, Ericksen, & Allen, 2005; Huselid, 1995; Qureshi & Ramay, 2006; Patterson, West, Lawthom, & Nickell, 1997; Singh, 2005;; Zheng, Salganik, & Gelman, 2006) also reported a positive relationship between employee participation and employee performance.

Employee participation was also noted to impact other work-related outcomes including heightened employee commitment and production at the workplace (Summers & Hyman, 2005), employee work output (Ichniowski & Shaw, 1995), job commitment and satisfaction (Edkins, 1988; Gunawan, 2006; James & Walters, 2002), and enhanced trustworthiness of employees (Lawler, 1975; Johnson & Johansson, 1991). In the context of occupational safety, employee participation may be referred to as the inclination of the employees to take on responsibility for the facilitation of an accident-free environment at work (Geldart, Shannon, & Lohfeld, 2005). This responsibility reflects the employees' willingness to proactively participate in the activities geared towards the learning process, and to encourage mutual support and co-operation (Topf, 2001). The successful practice of this responsibility can only be realized through the support of the organization. Thus, participation of employees can be considered as process that calls for a dynamic and

proactive behavior that entails problems solving for consistent advancement towards an environment characterized by safety (Shearn, 2004). Stated differently, employee participation can be deemed as the level to which the workers are involved in decision making regarding safety, are able to take part in achieving safety improvement, and are accountable for their actions and in taking pride in the workplace safety performance (Seligman, 1991).

According to Shearn (2004), employee participation has its basis on the employee's interest in a specific job. The level of participation ranges from no participation (managers, supervisors, central authority may decisions) to complete participation (all individuals are involved in decision-making) (Vredenburgh, 2002). Employees involved in decision making offer suggestions and feedback towards the firm's external and internal enhancement. More specifically, the participation of employees in safety is evidenced by their inclination to contribute ideas during seminars and training addressing safety. They also participate through active compliance towards safety operations, understanding of risks entailed in day to day operations, and inclination to express issues concerning safety issues, throughout the hierarchical levels of the firm.

Prior studies showed the presence of a relationship between employee participation and safety issues. For example, Cohen (1977), Cohen, Smithm and Cohen (1975), DePasquale and Geller (1999), Griffiths (1985), Harper *et al*. (1997), Shafai-Sahrai (1971), Shannon, Mayrm and Haines (1997), and Smith *et al*. (1975) demonstrated that firms reporting lower rates of workplace accidents displayed managerial styles and incentives including management appreciation of employee participation in new

employees' training, day to day communication, safety activities, and training for current employees concerning health and safety. It is evident that the above studies highlighted a significant and positive correlation between lower rates of workplace accidents and employee participation.

Lee (1998) focused on assessing safety culture in the Sellafield site of British nuclear fuels located in Cambria. He collected data with the help of self-administered questionnaires distributed among 5296 participants. The questionnaire encapsulated several safety domains like job satisfaction, safety rules, training, risks, safety procedures, and employee participation. He found that employee participation played a key role in safety management of firms. Along the same line of study, Ali *et al*. (2009) reported that employee participation positively correlated with rates of injury in the Malaysian manufacturing sector. They supported the contention that employee participation in making decisions decreases the rate of accidents and injuries in the workplace. Similarly, Johnstone, Quinlan, and Walters (2005) provided evidence of the positive contribution of employee participation towards occupational safety.

Consistent with the above studies is the one conducted by Vinodkumar and Bhasi (2010) who revealed that participation of workers in safety was significantly and directly related to safety performance of industrial units in India. Moreover, Gevers (1983) found a significant relationship between employee participation and workplace safety. Specifically, he noted that employees contributed preventing industrial accidents by being cautions of accidents waiting to happen. He stated that industrial accidents may be steered clear from if the ideas and experiences of employees are considered in the

definition and solution of safety issues. He added that employees' cooperation with the employer and with their peers is significant in enhancing the firm's working conditions. In the U.S., Vredenburgh (2002) also reported a significant relationship between workers' participation and rate of decreased injuries.

A study of the same caliber was conducted by Cheyne *et al*. (2002) in an attempt to look into the relationship between organizational safety climate, perceived physical work environment, perceived workplace dangers, and safety activity level among 708 employees working in a U.K. manufacturing firm. They revealed that a working environment and participation of employees were significant predictors of safety activities. This was mirrored in the findings reached by Carder and Ragan (2003) who examined 6000 employees in various U.S. plants. Specifically, they concentrated on analyzing the safety measures used in chemical firms and reported that employee participation assisted in improving the companies' safety performance. Similarly, Clarke (1982) studied worker's participation in terms of health and safety in Canadian firms and showed a significant positive linkage between participation of workers and prevention of accidents in the industries. Walters (1998) also carried out an examination of the employee participation-health and safety activities relationship in the U.K. agricultural sector. He found evidence that in order to achieve worker participation in safety and health, employees' experience and commitment to the organization should be considered. The authors also added that the participants' experience in the agriculture sector made them aware of any pitfalls of the dangers at the workplace. Singleton (1983) also revealed that employees' contribution to safety issues is an important factor in decreasing

occupational injuries and workplace accidents. The employees' expertise and the level of information they can access contributed to their ability to enhance working conditions and to make the right decisions. He also revealed a significant positive relationship between employee participation and decreased rate of injury. Rooney's (1992) study also revealed a significant positive association between participation of employees in decision making and the facilitation of a workplace characterized by safety. Rooney reported the significance of employee involvement in designing and implementation of plans and policies.

In the Norwegian oil and gas industry, Shannon *et al*. (1996) found that increasing workers' participation in issues of safety led to low workplace accident and occupational injuries. Costella, Saurin, and Guimaraes (2009) focused on the health and safety management system assessment utilized by Brazilian automobile manufacturers. They showed that workers' participation in safety issues was significant in the maintenance of an accident-free workplace environment. DeJoy (1996) determined the impact of an open and informal communication practice of employees in an attempt to address safety issues in a timely manner to minimize workplace accidents. He found that participation of employees in safety issues was a critical factor in decreasing such workplace accidents.

To sum up, the above studies have generally revealed that employee participation positively relates to safety issues and performance of employees. Therefore, it can be theoretically stated that the impacts of employee participation upon safety issues can enhance safety performance and minimize workplace injuries and accidents.

2.5.5 Performance Appraisal

A performance appraisal system, according to Fajana (1997), is a system that provides organizations the method to determine individual worker's levels and the areas requiring enhancement if optimum utilization is to be achieved workers. This definition is supported by Atiomo (2000), who noted that every organization should ensure that the individual worker is enlightened of his functions and responsibilities in order to facilitate an optimally working performance appraisal. There are three types of appraisals: confidential/secret appraisal, open appraisal, and semi-open/semi-secret appraisal. Only two types of appraisal namely confidential and open appraisal were noted by some studies (Mamoria, 1995; Ryars & Rue, 1979).

Performance appraisal aims to improve business efficiency via the mobilization of optimum efforts of individuals working in it. These appraisals are catered to achieving four aims namely salary reviews, development and training, planning job rotation, and assisting promotions. Specifically, Mamoria (1995) and Atiomo (2000) claimed that regardless of the frequent contention of the performance appraisal-pay relationship, it can translate into a host of objectives such as identifying training needs, improving present performance, improving potentials, improving communication, motivating employees, and determining employee pay. A worker is motivated through performance appraisal to improve his/her KSAs and to contribute to maximum output based on work satisfaction (Combs *et al*., 2006). This HPWS aspect is also related to an incentive regime wherein the incentives are provided with performance appraisal as the prerequisite (Naqvi & Nadeem, 2011).

To summarize, performance appraisal has been deemed as the most invaluable tool that an organization can possess, as the information produced from it is considerably useful in decision making regarding various personnel such as promotions and merit increment. Additionally, performance measures are also linked to information gathering and decision-making process which is the core of evaluating the effectiveness of personnel in recruitment, selection, compensation and training. The existences of valid performance data that are timely, accurate, objective, and standardized allow organizations to retain promotion and compensation policies consistent through the entire system (Burack, Elmer, & Smith, 1977; Vogus, 2004).

Several measurement scales were developed and used to assess HPWS. This is because there is a lack of consensus regarding the full scope of components forming HPWS (Beltran-Martin, Roca-Puig, Escrig-Tena, & Bou-Llusar, 2008). Besides, the different measures were developed to cater for different organizational characteristics. For example, different measures were used in trade, industry, tourism, and services (Applebaum, Bailey, Berg, & Kalleberg, 2000). But a review of the scales used in different researches revealed shared dimensions used frequently to measure HPWS. In the current study, it was necessary that a measurement scale that had been used in a nonprofit service organization that was shown to be both valid and reliable was employed. Accordingly, the measurement scale used by Herdman (2008) was found to be appropriate. The scale was found to possess high coefficient alpha reliability estimates of 0.77.

2.5.6 HPWS in the Service Sector

The HPWS application in the service sector has not been extensive (Harley, Allen, & Sargent, 2007) because of specific limitations in this field of work. The low skills and high skilled jobs categories in service sector are considered a barrier to the HPWS implementation (Harley, Allen, & Sargent, 2007). This is compounded by the notion that the HPWS application is only successful among high skilled workers although there have been several studies that proved the opposite (Harely, Allen, & Sargent, 2007). Among these studies is one conducted by Edwards *et al*. (2002) who revealed a positive correlation between HPWS and team work in the health care sector. Harley, Allen and Sargent (2007) reached the conclusion that HPWS positively affects employee's positive work experience and that it is illogical to think that HPWS application in the service sector should only be done on high-skilled workforce. They found that HPWS led to superior employee satisfaction and output of performance. They also revealed that performance was significantly and positively related to commitment but negatively related to psychological strain and work effort. Moreover, training was found to be positively related to commitment and satisfaction and negatively related to turnover intention.

2.6 Effective Reporting System

Reporting of medical error is a crucial requirement of patient safety (Hosford, 2007). Effective reporting systems form the fundamental aspects of the safety environment of the patient, as it improves safety needs, promotes error reporting and enhances

minimization of errors in the system (Tamuz, Thomas, & Franchois, 2004). In this context, a medical error may refer to as an unsuccessful planned action (execution error) or the use of a flawed plan in the quest to achieve an objective (planning error) (Hosford, 2007).

The IOM published a report on medical errors in 2000 entitled *To Err is Human: Building a Safer Health System* concerning the level of medical errors and the resulting negative impacts on patients, with the inclusion of death (Hosford, 2007). Following the publication, authors began concentrating on medical errors and thoughts concerning the organizational climate that facilitates reporting arose. When they examined the reasons behind lack of error reporting, it was revealed that the leadership's authoritative structure and the organizational climate hindered the reporting of errors (Marquis & Huston, 2009).

Nevertheless, researchers revealed several factors to jeopardize the reporting systems. They found that several systems are largely dependent on voluntary, spontaneous reporting of medical errors, where its efficiency is challenged by the rates of poor reporting – for instance, a systematic review of 40 studies concerning reporting of negative drug reaction in 12 countries showed that the median of under-reporting constituted 94% (Hazeli & Shakir, 2006). In Saudi Arabia, three primary factors were identified as major barriers to medication error reporting. These factors are lack of awareness of the reporting policy, workload and time constraints related with reporting, and non-availability of the reporting form (Tobaiqy & Stewart, 2013). In a related study,

Alsulami *et al*. (2013) conducted a systematic review of researchers dedicated to medical errors and found them to be scarce and of poor quality.

In light of the above discussion, proper reporting systems of medical errors and negative events are the major issues of patient safety. This reporting is crucial to enhance systems in order to minimize incidence (Tamuz *et al*., 2004). The reporting system in health care is the constant reporting of negative events, like incidents happening to patients, near misses and unsafe conditions that are crucial to be defined explicitly and included into robust reporting systems which keep the precise definitions of events under study into consideration (Kinnaman, 2007).

The debate lies between mandatory and voluntary reporting of patient safety errors with a few authors advocating the notion of compulsory reporting while others opt for voluntary reporting. Specifically, David (2001) stated that voluntary reporting systems are more effective in information collection because mandatory reporting is connected to punishments and hence hinders open reporting of errors (David, 2002). In addition, the IOM according to Kohn, Corrigan and Donaldson (2000) also supported the voluntary system of error reporting.

On the other hand, Wong and Beglaryan (2004) proposed that standardized reporting system would be the most optimum way to report errors and accountability. Consequently, they stressed on the creation of a national system. Meanwhile, other authors like Niclin *et al*. (2004) called for a mandatory reporting system on certain patient safety indicators in all health care institutions. With regards to a broader picture

over national boarders several jurisdictions call for mandatory reporting while some call for voluntary reporting. While Gardner, Baker, Norton, and Brown (2002) demonstrated that Australia and the U.S. have combined mandatory and voluntary reporting systems, in the U.K., the government has mandated reporting of all incidents. In the context of Canada, reporting has still not been conclusively decided.

Successful attempts to study human errors are relatively recent and the pioneering conference ever held to address the topic was conducted in 1980 at Columbia Falls, Maine catered to best explaining the nuclear reactor incident at Three Mile Island (Cuschieri, 2003). Following this event, significant attention to the health care industry arose towards medical errors but nothing monumental as the report from the Institute of Medicines in 1999 entitled *To Err is Human: Building a Safer Health care System* garnered the public's attention (Institute of Medicine, 2000). This report estimated that around 44, 000-98, 000 annual deaths that occur in the U.S. stem from preventable errors of medicine and this constitutes more annual deaths compared to the combined casualties from car accidents and cancer.

Specifically, Brennan and Leape's (1984) study showed 1,133 negative events that involved negligence in the hospitals in New York City, among which 599 took place in surgical and 534 in non-surgical. These results were supported by the 1992 study that was conducted in Colarado and Utah, which highlighted the negative incidents in health care when it comes to errors compared to other industries (Thomas *et al*., 2000). Added to this is the finding that very few of these medical errors were frequently reported and even fewer were being brought to attention by the parties adversely affected (Berlinger, 2007).

This begs the question of where the ethical and legal requirements are to tackle the issue. The American Medical Association's (AMA) Code of Medical Ethics (1992) states that the doctor should fully inform the patient concerning the error under ethical requirement, whether or not the error stemmed from his mistake or misjudgment and the outcome that was likely to follow (Snyder & Leffler, 2005). Additionally, as part of the hospital team, the doctor is obligated to report negative occurrences to authorities and to peers. Guidelines laid down concerning these ethical obligations, like the ones provided by the AMA, have been proposed in the codes addressing patient care (American Hospital Administration, 1992; American Medical Association Council on Ethics and Judicial Affairs, 2004; The Joint Commission, 2012).

Disclosure of error was acknowledged in hospital protocols and public awareness following the Joint Commission on Accreditation of Health care Organizations' (JCAHO) issuance of the pioneering disclosure in 2001, an act that appeared in reaction to the Institute of Medicine's (IOM) report (JCAHO, 2005). Nevertheless, the JCAHO's protocol overlooked the required disclosure content and failed to mandate the informing of patients when errors occur - whether due to human error or otherwise- as the underlying intention is not to admit liability. This requirement is supported by both doctors and institutions. JCAHO intended to inform the patient of the occurrence and the facts surrounding it. This brought about a shift from endorsing the disclosure significance to a mandate, as it is related to the hospital status accreditation – an accreditation that rates the quality of health care provided by the hospital to the public.

As a consequence, mandatory reporting systems of medical errors supported by law were initiated by parts with the introduction of the state regulatory programs characterized by various requirements. In 2007, 25 states along with the District of Columbia introduced a mandatory negative error reporting systems with more states introducing some kind of disclosure program or another in their legislative plans in the past years (Howie, 2009). Although this has been the situation in the past years, little legislative development has been made and reporting errors are still low. In the face of increasing stress on disclosure, literature shows that on top of fatal negative events, there are hundreds of thousands of unreported non-fatal errors but are nonetheless serious that may lead to dangerous outcomes. This is owing to the several barriers to open disclosure that are being overlooked by the health care industry (Manser & Staender, 2995).

Among the many disclosure studies, one was conducted by Blendon *et al*. (2002) with the help of a survey of 831 physicians and 1,207 laymen. In their research they showed that 35% of the physicians and 42% of the public contended that they experienced an error in their care or in that of the member of their family. Among the 2,038 survey responders, 46% of the respondents stated that the health care professionals who were aware of these errors just keep silent about them. Although such occurrences exist, neither group acknowledged that it is among the most significant issues in the health care industry in the current times. In a related study, Liu (2005) demonstrated that over 70% of the respondents in his study perceived that the top responsible personnel in hospitals are the physicians, as they are the ones providing care but only 20% were convinced that mandatory error reporting by hospitals and voluntary reporting by physicians would be

the top effective solution. In a similar study, physicians interviewed in groups stated that most doctors are convinced that disclosure of errors stemming from non-serious harm is considered an ethical imperative but they also stated that there are specific situations that are conducive to disclosure. In another related study, Kroll *et al*. (2008) introduced terms such as conspiracy of tolerance and professional loyalty that prevent physicians from reporting their mistakes. There is also selective disclosure where physicians may only report errors or adverse occurrences that resulted in positive outcomes and not those that are indiscernible.

Doctors may support the patient's right to disclosure but it is still challenging for them to admit their mistakes and apologize to the patient, often arguing that reporting a mistake may lead to patient anguish and exacerbate the harm (Levinson, 2009; O'Rielly, 2010). Additionally, this situation may lead to unnecessary suspicion in the patient's mind. In other words, what the patient doesn't know won't hurt him. Another argument against informing the patient is the patient's loss of trust, which could backfire on their health via stress experienced and the next step to be carried out (Levinson, 2009; O'Rielly, 2010). The challenge in handling adverse emotions that stem from patient disclosure can skirt around via selective or non-disclosure and has been cited by doctors for non-disclosure, particularly those that are undetectable or those that stem from ambiguous nature, sometimes from a natural cause (Gallagher *et al*., 2007).

Other reasons cited for protecting clients from the actual error is the wall of silence. First, physicians are success-oriented individuals who are proud of their ability to give care and harming a patient erroneously is not good for their reputation. Admission of mistake

could be difficult for the physician's self-image as he ended up hurting the individual he is entrusted to cure. Secondly, Banja (2001) contended that physicians have to live up to their personal and public expectations of being above-human when it comes to their skills and this could result in stress and even burnout. Burnout has been reported to maximize risk for production of error, which maximizes burnout and lead to self-defeat (Banja, 2001).

Following the occurrence of error, the doctor experience shame, guilt and sorrow for the patient, coupled with isolation from both patients and peers (Delbanco & Bell, 2007; Manser & Staender, 2005). Some other feelings experienced after an error include increased vulnerability of fear of criticism and disciplinary action, depression, anxiety over tarnished reputation, and sadness over economic loss (Croskerry, Abbass, & Wu, 2008), which begin to chip on self-esteem and self-confidence. In addition to the above, there is also the possibility of retaliation from the patient; for instance, malpractice litigation that may result in proliferation of information by media and over exaggeration of event).

Although barriers to error reporting may differ from author to author, and from researcher to the next, there is consensus among them of the fear of litigation, a fear that forms the core of non-disclosure. However, this contention has been argued against by authors who deem litigation to be moot as its alleged presence does not seem to be backed by evidence (Boyle, 2009). This latter argument contends that majority of patients seek correction of the harm that has been received. But there are those who consider a negative event, no matter how it is handled, as a chance for economic gain via litigation. It is these cases

that attract public attention and it takes only a single event to initiate the fears of the physician of the issue. It is without a doubt that fear of professional loss through litigation, is a normal reaction. This fear may result in costly, defensive practice among physicians although this is mostly not the general case just as the case of this fear may lead to non-disclosure. Physicians understand, as evidenced by literature, that transparency concerning medical/surgical errors may decrease medico-legal liability as it helps to minimize patient concerns and support loyalty via respect for doctor honesty (Calvert *et al*., 2008; Cantor, 2002; Gallagher *et al*., 2007).

Several studies reported support for disclosure, among which that only around 2-4% of negative events lead to courts (Richman *et al*., 2009). Other authors contended that a policy of transparency concerning disclosure of negative occurrences lead to minimized claims of malpractice (Guadagnino, 2005; O'Reilley, 2010b). Some others contended that doctors are still unaware that most patients value open and honest responses to their concerns and questions (Hingorani, 1999; Hobgood, 2002; McCaffrey, 2003; Lamb, 2004; Kraman & Hamm, 1999; Feinmann, 2009; Samanta & Samanta, 2011). Some authors stated that patients' family members acknowledged to taking the litigation route as they were disturbed by the lack of explanations and lack of communication (Gilbert, 1997; Wojcieszak, 2008). Patients have the right to be enlightened about the critical occurrences in which they are exposed to, even if it may not harm them. According to ethics and public opinion, when doctors commit mistakes, they are morally obligated to report their errors to their patients on time (Beauchamp & Childress, 2009; Snyder & Leffler, 2005). According to Lamb (2004), silence is a breach of professional ethics – a

gap in obligation to the patients' best interests. However, the premise of disclosure, based on autonomy and human dignity, often precedes national or state law that requires doctors or other professional health care providers.

In this scenario, medication errors offer a good base to examine the origin of errors among unique clinical environment demands. Medical errors are often studied by class in clinical literature and media, and they can cover administration of the wrong drug/drug dosage, erroneous frequency dose or administration to the wrong patient (Potylycki *et al*., 2006). Although error is acknowledged prior to the onset of harm, these 'near misses' or 'free lessons' are still significant (Gaba, 1994; Reason, 1997). Medication errors, as a case study, demonstrate the interconnection among the priorities, challenges of communication between care providers throughout several fields, and it entails many leadership layers. By acknowledging error as inevitable, patient safety theorists managed to tap into safety science literature addressing workplaces that often have performance and risk hand in hand like aviation, traffic control centers, nuclear aircraft carriers and nuclear power plants (Weick, 1987; Weick, 1992; Rochlin, Lap Porta, & Roberts, 1987). Organizations in the above field tackle complex technologies and processes where failure could destroy them. They also manage them with various workforces through unpredictable situations of high demand (Reason, 2000). In this context, similar to that of the hospital complex, these organizations work significant hours with few rates of incident and monumental failures. Underlying this observation is a considerable change in thinking and this involves the transformation from a person approach to a system approach. According to Reason (2000), the person approach considers errors as events

that largely stem from forgetfulness, inattention and moral deficiencies. This view dominates health care and many risky industries. In the context of this model, errors originate from the insufficiency of an individual and a suitable correction ranging from restraint to punishment. However, this model promotes an over-dependency on discipline and may often result in naming, blaming and shaming and, therefore fuels denial, secrecy and fear. They also ignore two main human error features: good clinicians are vulnerable to making serious errors under certain conditions, but the same set of conditions can generate the same errors despite the type of clinicians (Reason, 2000). This underlies an alternative organizational model namely the system approach that emphasizes on environments and processes as opposed to individual's working downstream of the system processes (Reason, 1997, 2000).

The system approach considers individuals as infallible humans and stresses on the working surroundings to determine latent conditions that lead to accidents. Action stresses on the constant identification of systemic inadequacies and empowers individuals working at the core to determine potential error making processes. In this system approach, safeguards in the form of human, procedural and physical elements are used as a defense against safety failures. These safeguards, both hard and soft are in the form of protection layers that are each created to deal with the potential failure of the first one (Reason, 1997). The layers are created to fulfill many purposes such as, guiding a safe operation, pinpointing hazards, offering barriers to hazards, limiting, lessening or eradicating hazards and offering solutions for damage minimizations and safe operation restoration with the failure of other defenses.

The employment of organizations of these approaches has led to the dramatic reduction of individual accidents that are still present in other less-advanced organizations. It is without a doubt that the highest dangers in high reliability organizations stem from a seldom but monumental firm accidents involving the causal contribution from several people across system and time (Reason, 1997). Stated differently, an ineffective organizational safety environment holds greater potential risks compared to individual errors as evidenced in the vigilance and participation methods employed in the system approach. The system approach promotes extensive vigilance that runs the safety data from various work process levels to protect against all failure levels. As such, the informed culture exists in the workplace environment where errors and near misses are reported freely from every personnel that form the front line and the many leadership echelons without fear of accountability (Reason, 1997). This requirement for a smooth flow of safety information underlies patient as a concept. It depends on the notion of an open, transparent, non-punitive workplace safety environment where reporting one's errors or others' is freely done and improves the patient safety. According to Reason (1997) and Cooper (2000), patient safety culture is defined along these lines and they encompass learning from errors as a contributing element to patient safety culture.

Another conceptualization of patient safety culture comes from Vogus and Sutcliffe (2007) and Singer *et al*. (2009). They defined patient safety culture in a general sense i.e., it is the shared values, attitudes, perceptions and behavioral patterns of members of the organization that seek to lessen patient harm. General and specific conceptions of patient safety culture have been examined, which has been indicated in the various measurement

methods that assesses patient safety culture quantitatively. Nevertheless, many common themes and practices stand out.

Studies dedicated to the currently available instruments used to assess patient safety culture were reviewed by Singla (2006). According to him, management and supervision factors were constantly examined, with the inclusion of training and supervision adequacy, institutional reactions to patient safety and non-punitive reactions to error. Along with these, risk, work pressure, competence of clinicians and reporting structures and regulations were also assessed. Additionally, Singla stated that psychometric properties of several instruments have not yet been reported and that significant instrument validation is still required. Overall, the increasing number of instruments in employment clarifies that patient safety culture has been quantified and this provides expansive analytic opportunities. But presently, only a few of these tools have been utilized to examine certain patient safety culture elements and existing work has been focused instead on quality assessments and benchmarking. Specifically, Nieva (2003) categorized the existing studies into four, namely, those that diagnose safety culture in order to determine areas for improvement, those that evaluate patient safety interventions, particularly longitudinally, those that benchmark internally and externally, and finally, those that focused on the fulfillment of regulatory requirements. It is logical to state that hospital leadership, government and regulators would be interested in these aims, and that these applications should stand out in current researches.

Owing to the fact that fear of reporting errors prevent the smooth flow of safety information that is core to the system approach, it poses a basic threat to good patient

safety culture. Fear of punitive repercussions from reporting errors prevents feedback networks among workers, management and defenses, defense upgrade or modifications become impossible. As such, error reporting is a main element of good patient safety culture.

The above was summarized by Bagian *et al*. (2001) in his work entitled *Developing and Deploying a Patient Safety Program in a Large Health care Delivery system: You Can't Fix What You Don't Know About*. Organizations characterized as high reliability acknowledge this fact and instead of ostracizing their workers for errors, they expect errors and encourage reporting of them. Moreover, instead of promoting silence, mistrust and cover-ups, they remind their employees to highlight errors so that defenses can react through continuous changes (Reason, 2000). But as mentioned, health care has not managed to free itself from the out of date perception of clinician perfection, and it still has far to go in its quest to embrace a just reporting culture that is free from fear.

It is without a doubt that a non-punitive patient safety does not call for abandoning professional standards, but it also does not mean that punishment should never be brought forward. In other words, discipline should be pursued for extreme acts like reckless non-adherence, where a no-blame culture is not considered feasible or desirable. A tiny portion of human risky acts are egregious and they deserve sanctions as a blanket amnesty on unsafe acts would lack credibility in the workforce (Reason, 1997). Similarly, Miller (2003) identified a distinction between willful violations and normal errors by stating that violations may or may not entail errors, but errors can happen with or without violations. Therefore, rather than pursuing a no-blame culture, Reason proposed two

goals, namely, to achieve a reporting culture where workers are not fearful of reporting errors and near misses, and to achieve a culture where workers are encouraged or rewarded for offering safety information in an information characterized by trust (Reason, 1997). In other words, the aim is to steer away from negative and pointless discipline of individuals that just maximizes fear and prevents open communication of errors.

Fear seems to be experienced by nurses as well as physicians. Studies about reporting behaviors reveal that nurses and physicians perceive and internalize fear in different ways. Hingorani *et al*. (1999), Blendon *et al*. (2002) and Gallagher *et al*. (2003) revealed that both U.S. and British physicians' reporting of medical errors was largely limited by fear of blame, estrangement from peers, and liability. In addition, based on Osmon *et al*.'s (2004) quantitative study involving nurses and physicians, although lack of confidentiality was postulated to maximize both groups' reluctance to report errors, the clear non-punitive tone of their project seemed to encourage reporting. This was supported by the study conducted by Jeffe *et al*. (2004), where nurses as well as physicians perceived that a punitive environment and lack of confidentiality were significant reporting barriers. They observed that underpinning notions for this fear differed between the two. Because nurses feared liability for reporting errors from nurse managers/physicians, and they fear the resulting report in their file, they stated that if they observed their peers committing errors they would only inform them. On the other hand, physicians feared malpractice litigation and the possibility of attracting negative attention to themselves in the hospital and in the community. These differences between the two

may be significant, as according to Singer *et al*. (2009), 20% more physicians compared to nurses reported fearing shame over error reporting and as such, frequent contact with error reporting may therefore minimize these fears. On the other hand, Jeffe *et al*. (2004) and Wild *et al*. (2005) claimed that U.S. nurses were more prone to reporting error compared to physicians or residents and in the same way, nurses were reported to outperform physicians in reporting errors (Osmon *et al*., 2004; Rowin *et al*., 2008). In Rowin *et al*.'s (2008) study, 29 acute care hospitals were observed over five years and a total of 266,224 error events were highlighted, out of which 1.1% of these events were reported by doctors while 45.3% by nurses. Specifically, nurses were more inclined to report near misses or events causing temporary harm.

2.7 Organizational Climate

Organizational climate refers to the acknowledged features of the organization and its sub-systems as reflected in its way of dealing with members, groups and issues (Asha, 2008). It is a set of measurable properties of the work environment, which are directly/indirectly perceived by the individuals at the workplace and assumed to affect their motivation and behavior (Litwin & Stringer, 1968). Asha (2008) claimed that organizational climate hinges on the perceptions of the employees, and reflects the manner to which employees acknowledge their work environment, which in turn affects their work-related attitudes and behaviors. Based on this definition, organizational climate may be described as the individual's attitude towards organizations in terms of, trust level, morale, conflict, rewards equity, leadership credibility, change resistance and scapegoating (Burton *et al*., 2004; Ngo, Foley, & Loi, 2009).

The first group of theorists including Glick (1988) and James (1982) contended that organizational climate is the individual's property, meaning it refers to the individual's perception concerning the norms and characteristics of the organization. Stated differently, organizational climate has its basis on its members' interactions. The second group of theorists (Friedlander & Marguiles, 1969; Schneider, 1985; Schneider & Reichner, 1983) opined that organizational climate is an organization's objective property, which are organizational policies and practices. This group of theorists believes that it is an organizational attribute as opposed to an individual attribute, despite the organizational members' perceptions. On the other hand, James and Jones (1974) stated that organizational climate may be used synonymously with psychological climate – a term that has been evaluated at par with disengagement, hindrance, esprit, intimacy, aloofness, production emphasis, consideration and trust.

Specifically, psychological climate comprises the summary of the employees' perceptions concerning the organization's internal environment (Burton *et al*., 2004). It refers to a perception of actual events based on the interaction between events perceptions and actual events. It must be kept in mind that psychological climate does exist in literature but in an ambiguous way in terms of organizational relevance and definition, organizational structure, and organizational culture (Denison, 1996; James & Jones, 1974; Schneider, 1990). The culture of the organization refers to the knowledge, belief and behavior within it along with social norms. Culture encompasses organizational culture because it is the form, belief, norms, social patterns and the manner

in which activities are conducted along with symbols and rituals (Denison, 1996; Schneider, 1990).

Climate reflects the individual's experiences and their observations and perceptions concerning a specific environment (James & Jones, 1974; James, Joyce, & Slocum, 1988; Schneider, 2000). Perceptions of climate involve the overall thoughts and feelings of the employees of what it is to work at a specific organization. Perceptions of climate characterized as subjective, temporal and susceptible to manipulation by leaders (Dennison, 1996). Climate is theoretically defined as the abstraction of the environment and hence, it cannot be described by just the aggregate of the factors in the environment (Schneider, Bowen, Ehrhart, & Helcombe, 2000).

The actual nature of climate, in light of measurement and conceptualization, has been an issue rife with controversy (Burton *et al*., 2004). The issues surrounding it have been mainly focused on the individuals' subjective perception versus the organizational nature of the construct (Guion, 1973; Hellriegel & Slocum, 1974; James & Jones, 1974; Mossholder & Bedeian, 1983). Stated differently, the debate focused on the most suitable evaluation climate at the level of research. Owing to the fact that perceptions comprise the individuals' experiences, researchers have often measured climate by the aggregate of individual climate (Klein, Conn, Smith, & Sorra, 2001; Kozlowski & Klein, 2000; Rousseau, 1985). In other words, if an extensive consensus is present among members, in light of their perceptions of climate, the average of such perceptions would sufficiently reflect the overall feeling of the group.

Some researchers have nevertheless postulated that climate is an environmental attribute that is developed by the organization's objective characteristics like its structure context (Payne & Pugh, 1976). For instance, according to Richers and Schneider (1990), climate consists of the organization's perceptions concerning rewards (formal or informal), policies, routines, practices and procedures. The description of climate as an objective attribute indicates that an outside person can measure the climate in the organization on the basis of its aspects. Based on this notion, individual perceptions of climate should be ignored and this goes against the traditional method of aggregating individual's perception to measure climate. If climate is an actual organizational characteristic, then totaling individual data to gauge climate may lose its appropriateness (Glick & Roberts, 1984; Roberts, Hulin, & Rousseau, 1978; Guion, 1973).

In order to eliminate this controversy, researchers have exerted effort to clarify the climate conceptualization (Schneider & Reichers, 1983; Koys & DeCotiis, 1991). According to several researchers, effort in this direction was exerted by James and Jones (1974) who proposed a distinction between psychological climate and organizational climate and has been acknowledged ever since (Drexler, 1977; James, 1982; Powell & Butterfield, 1978; Schneider *et al*., 2000). The distinction is made based on the analysis level. Specifically, psychological climate is examined at the individual level of analysis whereas organizational climate is examined at the organizational level. In the context of the former, psychological climate is described as the perceptions of the individuals and the meanings they link to their environment. On the other hand, organizational climate shows perceptions of the environment of the organization that are experienced among the

members and to which they turn for the psychological meaning of their environment (James & James, 1989; James & Jones, 1974; Schneider, 1975; Schneider & Reichers, 1983). This means that perceptions of individuals can be added together to an organizational level when there is consensus among them (James, 1982; Ostroff, Kinicky & Tamkins, 2003), with the added data reflecting the organizational climate. The individual as well as the organizational aspects of climate comprise employees' perceptions of what they experience within the organization.

Additionally, psychological climate is described as the perceptions and interpretation of the employees of their work environment (James, Hater, Gent, & Bruni, 1978; James & James, 1989; James, James, & Ashe, 1990). Every employee forms an interpretation of his/her perception in a manner that he/she can understand and hence, creating psychological climate. In other words, psychological climate may be conceptualized as the cognitive representation of the individual of his/her work environment (Anderson & West, 1998; Ashforth, 1985; Ragazzoni, Baiardi, Zotti, Anderson, & West, 2002). This cognitive representation enables individuals to give meaning to what is happening within the organization and identify the behaviors that would lead to the best results (Parker *et al*., 2003). In sum, psychological climate is attributed to individuals as opposed to the organization and is measured according to the individual's perceptions of psychological meaning in light of organizational features (James *et al*., 1978).

In order to decide whether organizational climate or psychological climate is suitable in research, it is important to consider the properties of the criterion variable (Glick, 1985; Parker, Baltes, Young, Huff, Altmann, Lacost, & Roberts, 2003). In case the criterion

variable is considered a characteristic of an individual, psychological climate is more suitable to be used. Contrastingly, when it is considered an organizational characteristic, then organizational climate is more suitable. In the present study, the researcher decided to use organizational climate as the study attempts to examine the variation in patient safety among hospitals as a whole and this calls for describing it at the organizational as opposed to individual level.

Other authors like Koys and De-Cotii (1991) provided criteria for a dimension to be deemed suitable for the measurement of organizational climate. According to these criteria, it has to be a perception of measure, a measure describing activities rather than evaluating it and a measure that is not an organizational aspect or task structure. These criteria help clarify the ambiguity between climate and culture and between the measures of organizational climate and organizational measures. They argued that the climate measure is distinguished from other organizational structure properties and that it can be utilized in the multi-contingency model in the context of organizational design (Burton & Obel, 1998).

Another basic question is how to communicate organizational climate to employees. Li, Frenkel, and Sanders (2011) addressed this question by stating that organizational climate can be communicated through distinctiveness, consistency and consensus. The result of a suitable organizational climate can be gauged through psychological climate of individuals – an aspect that has its basis on people's experience and their narration on what is happening around them at work (Li, Frenkel, & Sanders, 2011). The fundamental premise is that once all the individuals in the organization are provided a specific,

consistent and consensual climate, their decisions and actions will consequently end in unity (Li, Frenkel, & Sanders, 2011). This involves the synchronization of mind and actions which will result in satisfaction and well-being and a mind frame that is characterized as collective and rife with high performance (Li, Frenkel, & Sanders, 2011). This interconnections clarify that organizational climate is a widespread perception that results in collective action when positivity is maintained. The organizational climate will ensure success if HPWS is implemented in the organization.

In the context of health care, work environment can be examined in light of various conditions: physical, cultural, psychosocial, and work design that contribute to better health and well-being (Squires, Tourangeau, Laschinger, & Doran, 2010). This can be physically managed through enough workers, professional development opportunities, communication, nurses' participation in decision making, collaborative associations, nurses' autonomy and flexible schedules (Squires, Tourangeau, Laschinger, & Doran, 2010).

The environment of nurses and patient safety has been addressed by several studies (e.g., Squires, Tourangeau, Laschinger, & Doran, 2010). It has been established in majority of these studies that nursing is a profession involving high stress and high levels of workplace injuries and illnesses (Greshon *et al*., 2007). The emotional stability of nurses in a hospital environment is important as emotionally stable people are not inclined to reveal significant emotional responses towards adverse situations and they are better at finding solutions to problems (Teng, Chang, & Hsu, 2009). Nurses' emotional stability was also reported to positively impact patient safety (Teng, Chang, & Hsu, 2009). Caring

for patients is a stressful job that often calls for health practitioners' quick decision making in the hospital and hence, the importance of emotional stability of the nurses can be considerable. In case of emergency situations, the health practitioners' emotional stability can result in reaching rational decisions that can be significant to patient safety (Teng, Chang, & Hsu, 2009). Findings indicate that even with shortage of staff, patient safety can be improved through the promotion of the health professional's emotional stability.

The organizational climate-patient safety relationship can be explained through the motivation and behavior of workers (Asha, 2008; Walston, Al-Omar, & Al-Mutari, 2008). Organizational climate directly affects the selection of employees of effective behaviors and the improvement of patient safety (Walston, Al-Omar & Al-Mutari, 2008). A study was carried out in Australia in an effort to test a model with hypothesized links between organizational climate and unsafe medication administration. A model-fit was shown between organizational climate and the magnitude of violations to instructions, which was the sole variable that directly contributed to medication errors (Fogarty & McKeon, 2006).

The existing ambiguity between organizational climate and culture played an important role in developing a typical list that describes organizational climate. This has been extensively addressed by Burton *et al*. (2004) who proposed a set of items that described organizational climate. His scale employs a generalized view of climate and attempts at capturing several aspects of employee perceptions concerning their organizations (e.g. hospitals) such as morale, trust, equitability of rewards, credibility of leader,

scapegoating, conflict, and change resistance. The above variables are considered to be linked to the nurses' emotional stability, which eventually impact patient safety (Teng, Chang, & Hsu, 2009).

On a different viewpoint, organizational climate can also be studied through the selection of specific fundamental parameters (e.g., staffing, physical environment, infrastructure, and work environment). In the context of health care, if the above parameters are functional, it can result in motivation and minimization of employees' stress, particularly nurses, and if it is not, it can result in negative outcomes of patient safety and employee safety (Asha, 2008).

The environmental needs (both physical and organizational) should be patient-centered in a hospital so that enough attention is geared towards patient needs through technology use and behavior (Carayon, 2011, p.46). Establishing a patient-centered approach has been given increasing attention by many studies in an attempt to realize patient satisfaction and health care quality while at the same time lowering costs and errors (Epstein, Fiscella, Lesser, & Stange, 2010). According to Epstein, Fiscella, Lesser and Stange (2010), in addition to technologies, costs and timing related to the provision of patient-centered care, the most specific feature of this concept is determined as healing relationships that is based on trust and effective communication. This concept is linked with other health care terminologies like interactivity and team work (Epstein, Fiscella, Lesser, & Stange, 2010). Proper information sharing among health care professionals, the patients and patients' families will enable them to contribute to decision making,

deliberation and shared mind, and eventually to the organizational climate and superior patient safety (Epstein, Fiscella, Lesser, & Stange, 2010).

Prior theorists deemed leadership as a crucial organizational factor that influences employees' perception of organizational climate (Blake & Mouton, 1968; Likert, 1967; Indik, 1968) and empirical studies dedicated to organizational climate postulate that the varying leadership styles (formality, cooperation, and productivity) form distinct climates (Litwin & Stringer Jr., 1968). But later theoretical developments showed a more unit-centered leadership processes as opposed to a common organizational-level focus, indicating that interactions in the immediate organizational levels may have a more significant effect on the climate perceptions because at greater organizational levels, immediate supervisors mediate the events and processes (Indik, 1968). These theories are consistent with the vertical dyad linkage (VDL) model which stems from the premise that the relationship between leadership and employees are based on a set of dyadic reciprocal interactions and exchanges (Graen & Scandura, 1987; Graen & Schiemann, 1978). Researchers are currently integrating VDL theory with climate theory based on interaction (Schneider, 1990) and have reached at the conclusion that subordinates having high quality relations with supervisors experience higher organizational climate perceptions and display a consensus on climate compared to their counterparts having low quality relations (Kozlowski & Doherty, 1989).

From the above discussion, it is evident that organizational climate is important to many aspects. Under social exchange theory, the human link is through which the organizational climate reflects itself. Because nurses are the direct service providers to

patients in the health care system, lack of effectiveness in this area could mean heavy costs. Facilitating a conducive environment to effective nursing, calls for suitable organizational climate. Respectful interaction in the context of an organization comprise three components: (1) people respecting other's reports and are inclined to base beliefs and actions on such reports; (2) people reporting honestly so that others may employ their observations to validate their beliefs; and finally (3) people respecting their own perceptions and beliefs and attempting to integrate them to others' reports without self-criticism (Vogus, 2006).

Organizational climate, as described earlier, is comprised of individuals' attitude of the organization. It covers the level of trust, conflict, morale, equity of rewards, credibility of leader, resistance to change, and scapegoating. Organizational climate is the consistent environment quality felt by members that influences their behavior and that can be defined by the values of certain organizational attitudes or characteristics (Tagiuri & Litwin, 1968). Similarly, Glick (1985) referred to organizational climate as a psychological construct shared by the organization members as opposed to the climate of individual, workgroup or job climate. It is a psychological measurement of the organization rather than an employee's characteristic although it is assessed by individual polling. In sum, organizational climate may refer to and measured with the help of organizational level analysis (Glick, 1985).

Organizational climate can be measured in various ways through variables like individual autonomy, level of structure imposed on positions, reward orientation, consideration, warmth and support (Burton, *et al*., 2004). According to Koys and De-Cotii (1991), for a

dimension to be considered in the measurement of organizational climate, the following three important criteria have to be satisfied; it has be a perception measure, it has to be a measure that describes activities as opposed to one that evaluates it, and it should not be an organizational aspect or task structure. The above criteria ensure that the climate measure is not confused with other organizational structure properties and can be used in the multi-contingency model for organizational design (Burton & Obel, 1998).

Additionally, Burton *et al*.'s (2004) proposed scale is found to be the most appropriate for achieving the present study's objective for several reasons. Firstly, the items apply to chief nurses, and, secondly, the items are comparable at the organization level. Specifically, Burton *et al*.'s (2004) seven item scale has been shown to have high reliability with a coefficient of 0.82 (Ngo, Foley, & Loi, 2009). The scale considers a generalized view of climate and attempts at capturing different aspects of employees' perceptions of their organizations (e.g., trust, morale, rewards, equitability, leader credibility, conflict, scapegoating and change resistance). The present study adopted these items.

2.8 Relationship between Transformational Leadership and High Performance Work System

It is argued that the components of HPWS need leaders who are able to convey its concepts and strategies (Kirkman, Lowe, & Young, 1998). The middle level leaders are requested to translate strategies of the HPWS into actions. For example, they are responsible for planning, designing and carrying out the necessary training programs for the employees working under high performance work system (Gephardt & Van Buren,

1996). The middle level leaders are expected to face resistance in delivering HPWS because the employees are usually like a structure that ensures security that comes along from the boss, as they either have "low growth needs" or they don't "value autonomy" (Kirkman, Shapiro, Novelli Jr, & Brett, 1996). Moreover, Hodgson, Farrell, and Connolly (2007), in a review of improvements in the UK public sector, highlighted the importance of leadership in increasing staff motivation, self-esteem, and commitment, which are all considered essential components of HPWS.

2.9 Relationship between Transformational Leadership and Effective Reporting System

High reliability organization theory (HROT) is based on the premise that errors can be minimized via top leadership commitment and a reliable organizational culture (La Porte, 1996). Contrastingly, the Normal Accident Theory has its basis on the premise that accidents cannot be stopped and they are normal, suggesting that this theory takes a pessimistic approach to minimizing or stopping errors from happening in complex workplace (Perrow, 1984). Based on the HROT, senior leadership behavior and attitudes are related to high levels of reliability (La Porte, 1996; Roberts *et al*., 2001). HROT are also believed to have lower error as they are premised on the idea of a safety culture or a reliable culture. Researchers claim that creating system, training and learning redundancy may enhance safety even in the context of complex and strictly connected systems (Gaba, 2001; Roberts, 1990; Ruchlin *et al*., 2004). Leadership and safety culture theories stem from HRO studies are invaluable to hospitals as they are catered to enhancing patient safety outcomes (PSO), Reason (2000).

Safety culture is a term that was coined by the International Nuclear Safety Advisory Group following the Chernobyl disaster in 1986. Safety culture refers to the combination of characteristics and attitudes in the organization and individuals which establishes it as a top priority and it receives significant attention (International Atomic Energy Agency). Organizations possessing a strong safety culture attempt to always maintain safety as its top priority (Katz-Navon *et al*., 2005). Safety commitment entails the provision of required resources, incentives and rewards for the promotion and enhancement of safety. A dimension of safety culture that stands out in health care studies is related to the perceptions of employees of the general priority allocated to safety within the health care environment (Katz-Navon *et al*., 2005). Although a debate is ongoing regarding the actual components of a patient safety culture (PSC) in a hospital, six crucial components obtained from HROT have been highlighted, as shown by Singer *et al*. (2003). These components are caring and safety environment that is blame-free, commitment and drive for a safety-centered institution, resources, incentives and rewards provided for the facilitation of commitment, communication, collegiality and openness regarding errors, and safety priority.

For the creation of a PSC and the achievement of minimized errors, literature constantly highlights the role of leadership in promoting clear, supportive culture that caters to the efforts of the workers (Ruchlin *et al*., 2004) and one that is non-punitive, just and is on the side of those who have committed errors (Cohen *et al*., 2003). An effective PSC can assist in reducing medical errors. But only a few CEO in hospitals consider safety as a top priority or they have allocated resources to PSI (Leape & Berwick, 2005; Singer *et*

al., 2003). To develop a culture that reinforces patient safety, significant organizational change is required in hospitals as top leadership is a crucial driver of successful organizational change (Buch & Rivers, 2001).

Kotter (1991) proposed three major leadership tasks that have to be performed to bring about change within the organization and this includes the creation of PSC. First, senior leadership should establish the direction of the organization and as such, a convincing vision should be developed and articulated to guide the activities. Leadership should then align people skills with tasks, employ values and beliefs and stress on the significance of a united mission and purpose. Because the vision development entails every worker's effort, an effective alignment calls for effective communication in a constant manner and communication is intended to develop the unity and cooperation needed to achieve success in organizational change. The final step entails leadership's provision of motivation and inspiration to the employees by convincing them of their confidence in goal achievement and their future optimistic expectations. According to Kotter (1990) the above key tasks along with the involvement of effective leadership of the moral and ethical outcomes of decisions make up the whole picture.

The Multifactor Leadership Theory proposed by Bass and Avolio (2000) has been employed in management literature (Colbert *et al*., 2008), and in literature concerning health care (Kanste *et al*., 2007). The model puts forward three different styles of leadership namely transformational leadership (TFL), which is based on charisma-inspiration, transactional leadership, which is based on rewards and punishments, and laissez-faire leadership, which refers to lack of leadership. TFL has been brought forward

and acknowledged as the most effective among the three styles (Bass, 1990; Bass & Avolio, 2000; Bass & Riggio, 2006; Tichy & Ulrich, 1984). Specifically, the TFL style's charisma-inspiration dimension, which stresses on leadership behaviors, facilitates followers with a clarified sense of purpose that is motivating, and model for ethical conduct that develops leader and vision identification (Bass & Avolio, 1995). This is consistent with Kotter's (1990) task requirements required for organizational change. The TFL's charisma-inspiration dimension is also consistent with Grabowski and Robert's (1997) theory concerning the general decision-making style displayed by HRO leaders. According to Schulman (1996), the HROs may be successful in realizing high reliability objectives as their leaders reflect transformation heroics. A good example of such HRO is Admiral Rickover, who introduced a new culture in the U.S. nuclear Navy fleet. He is of a certain mystical and unreachable aura (Lehman, 1989), and a profoundly visionary figure that is extremely charismatic for specific group of people (Bierly & Spender, 1995). Admiral Rickover was considered by most as an inspirational role model advocating a clear organizational vision. His success can be deemed in light of the positive role that a TFL leadership style may play in the creation and promotion of culture safety in the HRO.

The development of an effective system of reporting errors without blame is the second initiative (Leape, 1994; Uribe *et al*., 2002). HROs generally reward error discovery or report, as they are convinced that it is more valuable for an employee to report timely mistakes rather than to hide and overlook it (LaPorte, 1996; Rochlin, 1996). For instance, the Federal Aviation Administration (FAA) laid down voluntary Aviation Safety

Reporting Program in 1975 in order to encourage pilots, controllers, mechanics, dispatchers etc. to report errors that are safety-related, at the right time without having to fear any punitive actions for it (FAA, 1997). In the context of health care, employees tend to fear reporting errors owing to the punitive consequences. This is evidenced by the study conducted by Sexton *et al*. (2002) that involved 182 intensive care personnel. They found that several medical errors were hidden by the medical staff because of their fear and concerns regarding their personal reputation (76%), malpractice suits (71%), disciplinary action by the licensing boards (64%), and loss of job (63%). Accordingly, eradicating fear is what Deming's (1986) philosophy is based on. According to him, a general issue in the manufacturing environment was that employees fear reporting quality issues owing to the possibility of not meeting quotas, reduction of pay, or being blamed for the system error.

Therefore, to help maximize error reporting trust and mutual respect between administrators and front-line employees in an organization has to be established (Firth-Cozens, 2004). Two case studies conducted by Cox *et al*. (2006) showed that within a particular HRO context, the significance of trust and its effect on safety culture are well-defined. Several studies have also examined the role of error reporting systems (e.g. Chiang, 2001; Doolan & Bates, 2002; Walshe *et al*., 1995) and they revealed that the concentration should be on the process as opposed to the individual error reporting (Leape, 1994).

The third initiative regarding the facilitation of patient safety includes the promotion of open discussions of errors (Vanderveen, 1991; Klein *et al*., 1998), as this is a basic TQM

principle (Ahire *et al*., 1996; Deming, 1986; Flynn & Saladin, 2001). Accordingly, communication dedicated to different error types freely flow within the HRO systems, and employees are encouraged to open up concerning mistakes and to report them (Rochlin, 1996). Bierly and Spender (1995) stated that Admiral Rickover was convinced that hiding errors could be dangerous as leaders could become complacent and the organization may not learn from its errors.

In hospitals, focus groups, quality circles as well as other techniques that encourage open discussion of errors are effective methods that can minimize errors (e.g. Edmondson, 1996, 1999; Mullins & Schmale, 1993; Klein *et al*., 1998; Vanderveen, 1991). Specifically, Tucker (2007) revealed that psychological safety, the notion that employees can freely discuss errors, was positively related to performance enhancements among frontline workers in hospitals.

The fourth initiative entails a cultural shift towards a systems point of view (Klein *et al*, 1998; Ruchlin *et al*., 2004). As opposed to the traditional approach of naming, blaming and shaming (Reason, 2000), which is a theory known as theory of bad apples in hospitals (Berwick, 1989), a shift in error perception and their causes have to be realized. In HROs, such organizational shift is based on the evaluation of the overall impacts on the system's reliability and performance (Rochlin, 1996). This initiative is built on the premise of system changing wherein individuals work rather than attempting to modify their condition. This is consistent with Deming's (1986) viewpoint that a shift towards system thinking is required in organizations embracing the TQM philosophy.

The fifth initiative to enhance safety is the provision of education and training to employees as an attempt to reduce errors (Becher & Chassin, 2001; Huq & Martin, 2000). Employee training forms an integral part of the TQM systems (Ahire *et al*., 1996; Deming, 1986; Saraph *et al*., 1989). In the aviation sector, education and training have always been used as a technique to improve safety, emphasizing the significance of communication and teamwork (Hemlmreich *et al*., 1986). In the context of other HROs, such as the Navy's nuclear submarine service, drills and training exercises are carried out even during times of peace (Bierly & Spender, 1995). This continuous training ensures quick and timely response of workers and their effective reactions to dangerous situations without supervision or guidance (Rijpma, 2003). Some of these HRO concepts are being adopted by health care in order to improve patient safety (Makary *et al*., 2006), including behavior-based training that works to enhance the performance of the team.

Clear, significant and support for patient safety initiatives displayed by organizational leaders has been advocated to be important for the initiative success in theoretical papers of Leape (2007), and Frankel, Leonard and Denham (2006). However, empirically, these have largely been untouched. The theoretical indicate the involvement and buy-in from organizational and departmental leadership to promote initiatives of patient safety for the initiatives to have effectiveness and credibility (Leape *et al*., 2000); Pronovost *et al*., 2003). A good example stems from the examination of training interventions to improve patient safety culture perception among nurse managers (Ginsburg *et al*., 2005).

Such empirical examinations are boosted by the increasing number of assessment tools previously examined. For instance, current tools for the assessment of safety leadership at

the organizational as well as unit level stem from the Modified Stanford Instrument's (Ginsburg *et al*., 2009) dimensional analysis. Among the five patient safety culture dimensions included in the analysis, organizational leadership for safety and unit leadership for safety were highlighted as the top most significant and reliable dimensions. These tools open opportunities of measuring staff perceptions support towards patient safety by leadership at organizational as well as unit levels.

Separate contributions of organization against unit leadership are called for particularly given the extant studies that revealed their reinforcing and compensatory roles. Examples of these studies include Zohar *et al*. (2007) whose study involved nurses working in 69 inpatient units in three hospitals. They noted that when organizational and unit impacts were significant, patient safety was heightened, and when organizational impacts were low, the effect of unit climate on safety heightened, supporting a compensatory effect.

In a related study, Armstrong and Laschinger (2006) studied the nursing practice environment quality and its association to the patient safety culture in the context of a Canadian community hospital. His study involved 40 nurses who were required to complete three sets of questions that measured their perceptions of structural empowerment, magnet hospital characteristics, and safety climate. Specifically, the Conditions of Work Effectiveness Questionnaire – II gauged the perceptions of nurses concerning opportunity access, information, support, resources, formal power and informal power. Magnet hospital characteristics were gauged with the help of the Lake Practice Environment Scale of the Nursing Work Index which covered the magnet hospitals cultural components, namely, nursing participation in hospital affairs, nursing

foundations for quality of care, ability of nurse manager, leadership and support of nurses, adequacy of staffing and resources, and the level of collegial nurse/doctors relationships. The Safety Climate Survey was utilized to gauge perceptions of safety climate culture. The authors found significant relationships between structural empowerment and magnet hospital characteristics and patient safety culture. They concluded that nurses having extensive access to support, information and resources displayed greater degrees of magnet hospital characteristics like empowerment and environment conditions that reinforce safe nursing practice. Nursing and organizational leaders were enlightened of a culture of patient safety characterized by a climate where nurses were not afraid or discouraged from opening up about issues and were considered as equal and motivated decision makers.

In another related study, Black (2011) investigated the reluctance of nurses to convey safety concerns in endoscopy clinics located in Nevada. The Nevada state health division examined concerns regarding epidemiologic safety events in 2008 that occurred in two clinics where nurses were found to often reuse equipment and medication vials intended for a single use. This led to the occurrence of an outbreak of nosocomial hepatitis C. The nurses claimed that they were told to reuse the equipment and purchasing records supported their claims. Investigators later revealed that reuse was not attributed to lack of knowledge of infection control and that the dangerous practice stemmed from the concerns of nurses of losing their jobs, as most of them who did report these concerns to management were fired. A nurse who voiced her concerns was told that that was the way things were done in the clinics. Within the two Nevada endoscopy clinics, 22 nurses were

involved in ‘normalization of deviance’ and faced legal charges for their negligence. The researcher stated that a mere 21 United States have legislation for whistle blowing that protects nurses who step up and report safety issues. Further need was highlighted for health organizations to facilitate workplaces that promote openness of communication regarding safety of patients.

Yet, worldwide data generated showed that medical errors can be prevented if there is a free and fair reporting procedure. Furthermore, Marquis and Huston (2009) showed that a mere 6.9% of the respondents revealed support from hospital administration when reporting medical error and 19.6% revealed the absence of such support. In this backdrop, rethinking has to be done on whether the entire “medical liability system” needs a remodeling. The new approach says that leadership should consider errors as learning opportunities and employees as heroes rather than villains for committing errors (Alahmadi, 2010).

Joshi, Anderson, and Marwaha (2002) addressed that reporting system has been overlooked for long time, and competent leadership is one of many factors to explain inadequate reporting system. Joshi, Anderson, and Marwaha argued that adequate efficiency could be achieved through leaders who are knowledgeable about patient safety and capable of assuring employees to report errors without being punished. Such argument was supported by Tuttle, Holloway, Baird, Sheehan, and Skelton (2004) in their attempt to evaluate the impact of introducing electronic reporting system in educational hospital. Tuttle *et al*. found that encouraging the nurses and physician leaders working in the intensive care units to support non-punitive reporting system was

associated with empowerment of the reporting system as a whole.

On another view on the relationship between leadership and effective reporting system, Weber and Joshi (2000) showed that reporting of medical errors and near misses is potentially affected by many factors among which is a leader's commitment. They emphasized that leadership was committed to becoming the most trusted source of comprehensive health services that provides high-quality, safe patient care that could be measured and reported. Trust in leadership perceived by the registered nurses has been showed to be one of the essential factors that amplifies reporting of medical errors and use of care pathways (Vogus & Sutcliffe, 2007). The demotivating leadership practices in Fiji can be taken as a negative example in this matter. The oppressive leadership practices in Fiji caused less reporting of medical errors owing to the fear of reprisals thereby resulting in reduction of patient safety (Stewart & Usher, 2010).

A study conducted in Canada involving acute care hospitals found a relationship between patient safety leadership and patient safety behaviors such as learning from safety events (Ginsburg *et al*., 2010). More specifically, it was found that nurses' leadership through their position in the hierarchy of the organizational management affect patient safety and could mitigate the occurrence of adverse events (Stewart & Usher, 2010).

2.10 Relationship between HPWS and Organizational Climate

A stream of research has been dedicated to investigating the HRM factors and their possible anteceding effects on performance. To begin with, Arthur (1994) showed that steel mills that operated based on commitment-centered HRM systems displayed greater

productivity, lower rates of scrap and lower employee turnover compared their counterparts that operated with control-centered HRM systems. Also, Huselid (1995) revealed that HRM practices like employee recruitment and selection procedures, compensation and performance management systems, employee involvement and training significantly affected both employee turnover and productivity on corporate financial performance (short and long-term). Along the same line of contention, Huselid, Jackson, and Schuler (1997) highlighted HRM effectiveness association with increased financial performance as proxied by productivity, cash flow and market value. Similarly, Youndt, Snell, Dean and Lepak (1996) revealed that in the context of quality manufacturing strategy, employee productivity was higher in manufacturing plants where in HRM systems were concentrated on improving human capital. In another study, Patterson and West (1998) demonstrated significant impacts of job design and employee skill development upon productivity and profitability of SMEs in the UK manufacturing sector.

The above studies provide empirical evidence of two specific relationships of enhanced performance, favorable work climates and progressive HRM policies and practices. Because performance is related to work climate as well as HRM factors, two conceptual models can be developed. On one end, progressive HRM practices may improve climate perceptions and business performance, which raise the possibility that the noted relationships between climate and performance depend on a common third factor, that is, that climate and performance are not related causally. Another possibility is brought forward by Kopelman, Brief, and Guzzo (1990), Huselid (1995), Delaney and Huselid

(1996), and Ostroff and Bowen (2000), who stated that climate mediates between HRM and performance. This premise is based on the claim that progressive HRM practices promote a positive work climate, which leads to maximized employee well-being and motivation, which eventually leads to improved DMU performance. This process was elaborated in Kopelman, Brief and Guzzo's (1990) model of organizational functioning. They proposed that HRM practices that cater towards enhancing productivity also impact one or more work climate dimensions, considered "meaningful interpretations of a work environment by the people in it" (p. 290). For instance, payment and promotion policy changes are expected to modify employee perceptions of reward orientation, which is characterized by equity and fairness. Similarly, training programs, a practice that is frequently proven to enhance productivity, may possibly have a positive impact on the perceptions of employees of task support while work climate is proposed to influence the cognitive and affective employees' states at the workplace particularly work motivation and job satisfaction. These psychological aspects shape individual behaviors with regards to job performance and citizenship, which in turn impacts the productivity and performance of the organization.

The mediating role of climate was also supported by Patterson and West (1998) although their sample size was relatively small (n = 37). In a similar, vein, Becker and Gerhart (1996) stated that the HRM impact on DMU performance cannot be understood without the determining appropriate intervening variables, and understanding the joint and connecting roles of HRM and climate and is thus a significant element in providing an insight into DMU performance analysis.

The research carried out by Takeuchi, Wang, Lepak and Takeuchi (2007) is important to this study because instead of trying to find direct links between HPWS and organizational performance, a venture in which many researchers have failed, these researchers tried to recognize all the intermediate linkages involved. Takeuchi, Wang, Lepak, and Takeuchi showed empirically that high performance work systems were capable of developing collective human capital and better social exchange within an organization and improving overall organizational performance through intermediate linkages, the most crucial of which is the work force. It follows from the above findings that in a hospital setting, the organizational climate can be made more conducive for patient safety as a result of high performance systems. In realizing that human link is crucial in connecting practices with performance that Takeuchi, Wang, Lepak and Takeuchi (2007) identified collective human capital and social exchange as the mediating factors.

The element of human link was investigated in yet another study carried out by Teng, Chang, and Hsu (2009) to examine the impact of the emotional stability of nurses upon patient safety. The quantitative study that spanned across a whole year with data collected from 263 nurses working in Taiwan medical centers showed that emotional stability of nurses could contribute positively to patient safety. They also demonstrated that high performance work systems could reduce stress in situations when work load was high and challenging. They concluded that organizational climate conducive for the emotional stability of nurses needs to be cultivated. Richardson and Storr (2010) addressed that nursing leadership and empowerment can have a positive influence on patient safety. Leadership is the factor that imparts consistency to high performance. This is reflected in

the engagement degrees, in terms of quality and safety, at the level of leadership and governance, and especially in the decisions and actions of the hospital board where decision making and issues of quality and corporate governance are tackled (Richardson & Storr, 2010). In this context, many opposing views and perceptions were identified among nurse executive, chief executive officer and board chairs (Richardson & Storr, 2010). This again relates to the issues with leadership, team work, interactional justice and organizational climate.

Naqvi and Nadeem (2011) studied high performance work systems as a source of motivation for an organization in a highly competitive environment. The study revealed that employee motivation caused by HPWS was imparting a competitive advantage to the organization. Combs, Liu, Hall, and Ketchen (2006) studied the impact of HPWS on the overall organizational performance and concluded a positive connection between the two.

Whether organizational climate can act as a mediating platform between HPWS and performance (patient safety, in the case of health care sector) remains largely an unanswered question. Combs *et al*. (2006) did not include organizational climate as one of the three identified mediating elements between HPWS and performance. The mediating factors examined were KSAs of employees, employee empowerment, and employee motivation. Yet, empowerment and motivation are two factors that make partly organizational climate. In this context, Combs *et al*. (2006) were supporting the mediation role of organizational climate in the link between leadership and HPWS, and performance.

Li, Frenkel and Sanders (2011) compiled research on the mediating role of organizational climate in the HRM system strength-organizational performance relationship and concluded that climate strength often mediates the outcomes and the antecedent-outcome relationship is stronger in a strong situation compared to a weak one. The similarity and convergence of perception across the human resource of the entire organization is implied here.

2.11 Relationship between HPWS and Patient Safety

Harris, Cortvriend, and Hyde (2007) showed that human resource management was connected positively with performance in health care organizations in the UK health sector. Like many other countries of the world, UK has also been working on improving HRM in health care sector (Harris, Cortvriend, & Hyde, 2007). The national health system (NHS) plan was initiated by the UK Health Department to give priority to HRM while carrying out modernization of the country's hospitals (Harris, Cortvriend, & Hyde, 2007). Harris, Cortvriend, and Hyde cited many studies that showed that:

1. The percentage of staff working as teams and level of training sophistication significantly and negatively impacted patient mortality.
2. Attitudes of employees changed in response to HRM practices.
3. HR practices like opportunities for career development, job influence, job challenge, training, performance appraisal, teamwork, decision making involvement, work-life balance and good and respectful management, improved employee commitment, satisfaction and motivation.

4. HR practices like effective supervisory leadership and delivery of promise evoked trust among employees.

Noe (2006) listed the following conditions of high performance, which constitute organizational climate:

- Teams perform work.
- Employees participate in selection.
- Employees receive formal performance feedback and are actively involved in the performance improvement process.
- Ongoing training is emphasized and rewarded.
- Employee rewards and compensation relate to the company's financial performance.
- Equipment and work processes are structured and technology is used to encourage maximum flexibility and interaction among employees.
- Employees participate in planning changes in equipment, layout, and work methods.
- Work design allows employee to use a variety of skills.
- Employees understand how their jobs contribute to the finished product or/ service.
- Ethical behavior is encouraged.

The term, high performance work system, itself implies high performance. Yet, if the question, “what exactly are the specific policies and practice that lead to high

performance?" is raised, answers may vary (Pattanayak, 2005). In response to the question, Pattanayak (2005) prepared an HPWS index based on a thorough review of HPWS in many corporate companies. There was a level of consolidation of data on how HPWS impacts organizational performance (Pattanayak, 2005). These data showed that in organizations where the implementation of HPWS was found to be most effective, turnover of employee was almost half, sales per employee was quadrupled and the ratio of firm's market value to the book value of assets was tripled (Pattanayak, 2005). Thus HPWS is embedded in organizational climate and all the same has the ability to change the climate (Pattanayak, 2005). In the study carried out by Naqvi and Nadeem (2011), they showed that 10 components of high performance work system positively impacted employee motivation. These components were higher pay, incentive based on performance appraisal, employee ownership, information sharing, employee participation, training, and skill development, job design, minimized status differences and barriers, self-managed teams and HR practices measurement.

When the special case of nursing and patient safety is scrutinized, it becomes evident that apart from commitment, discretionary effort and skill, which is the naturally expected outcomes of HPWS, nursing needs to invest further beyond (Vogus, 2004). This is so because the complex work relationships involved and also the unpredictability of what work might create very distinct needs and situations. A general picture of this can be derived from the discussion by Vogus (2004) provided below:

First, nurses are highly (i.e., reciprocally) interdependent both with other functions (e.g., doctors, pharmacists, technicians) and with the actions of nurses from prior shifts.

Second, nursing expertise is distributed across a unit such that nurses need to regularly draw on each other for second assessment of patient conditions as well as advice on specific procedures, medications, or pieces of equipment (Benner, Tanner, & Chesla, 1997). The high levels of interdependence characterizing nursing work suggests that performance (e.g., patient safety) is a collective accomplishment resulting more from gaining an intimate and particular understanding of patients through effective collective relational practice and coordination rather than from relatively isolated individual performances.

In addition, Vogus (2004) highlighted the requirement of a rich collective sense making in the health care sector. Here, interactional justice is what counts. It was observed that sense making will become wholesome only when there is trust, honesty and mutual respect (Vogus, 2004). Such effective interactions enable real-time understanding when unexpected scenarios occur (Vogus, 2004). Grave issues of patient safety are most often found to appear from such unexpected scenarios (Vogus, 2004). The collective sense making described by Vogus (2004) becomes an answer to such issues through the robust template that it provides for behaving with system awareness and integrating their actions effectively in the ongoing process of the organization. This situation also necessitates a special organizational climate that is conducive for team work and information sharing. High organizational climate strength is also the cause of high work satisfaction (Li, Frenkel,& Sanders, 2011) and work satisfaction is also linked with patient safety. Hence, the equation can be written as leadership and HPWS yielding work satisfaction and better performance, which in the case of health care system is mostly patient safety. The

contribution of HPWS to organizational climate is shown by existing research (Li, Frenkel, & Sanders, 2011) but whether organizational climate allows HPWS to evolve further is a concept to be explored more deeply.

There has been some level of change in health care sector in tune with the ethos of resonant leadership, human-centered organizational climate and HPWS. For example, health care organizations consider physicians in development teams in an effort to include a fresh perspective by them and to have champions assisting with the implementation of changes (Lighter, 2004). The successful functioning of a team depends on having a clearly defined task and objectives, and performance appraisal and feedback (Lighter, 2004). Members of the team have to be assigned responsibilities that match their skills (Lighter, 2004). Good communication ensures group identification, and in turn, organizational performance (Lighter, 2004). Quality improvement through team work has been a concept in existence even before HPWS was introduced. Yet, HPWS has been instrumental in bringing in a synthesis of individual level and system level approaches to quality improvement. The supporters of HPWS have gone a step further and claimed that a specific set of best practices can lead to surplus value in different business contexts regardless of the strategy and the introduction of these practices additionally impacts performance and negates the system level approach that creates the basis of HPWS (Naqvi & Nadeem, 2011).

There is a low-skilled employees serving in the health care sector; there is a debate regarding how HPWS works with them especially that empirical studies have shown that HPWS works better in high-skilled jobs and in manufacturing sector (Batt, 2002). In

health care services, a study which covered 52 hospitals in England found that the adoption of a complementary set of high performance human resource management policies and practices was significantly related to patient mortality (West, Guthrie, Dawson, Borrill, & Carter, 2006).

Trust is described as the inclination of the party to be open to vulnerability towards another party's actions on the basis of the expectation that the latter will conduct an action that is significant to the former, regardless of the monitoring or controlling ability of the former (Mayer, Davis, & Schoorman, 1995). In this regard, Pfeffer (1998) claimed that trust is the top most important factor when evaluating practices of management through the question, "Do they convey and create trust, or do they signify distrust and destroy trust and respect among people?" (p. 62). Accordingly, trust is considered as having a significant mediating relation in high performance work systems. Several elements of high performance work systems lead to trust in management. For instance, according to research, trust in management is an outcome of transformational leadership (Barling, Mountinho, & Kelloway, 2001) and it has a mediating role in the transformational leadership-follower performance relationship (Jung & Avolio, 2000). Furthermore, Pillai, Schriescheim, and Williams (1999) explained that trust in supervisors has a mediating role in the transformational leadership-subordinates' citizenship behaviors relationship. Therefore, management systems that encourage employment security have a tendency to increase trust in management particularly in times of instability and turbulence (Cascio, 1993). This also holds true for organizations in their earlier stages of less production system (Shin & Lee, 1999).

Similarly, the role of sharing safety-related information in developing trust in management of employees has also been reported. Specifically, Fitz-enz (1997) indicated that during turbulent situations, information sharing will likely lead to higher levels of employee trust. In this regard, Clarke (1999) concentrated on the safety perceptions of senior management working in British rail and train drivers. According to her findings, although both groups stressed on the significance of safety, perceptions of the importance linked with safety by the latter group was not accurate. Drivers underestimated the level to which management were concerned about their safety. In this context, it is not logical to expect the drivers to trust management when it comes to safety-related issues. The most evident way of minimizing this issue and developing trust would be for management to share information with the drivers particularly those concerning importance of safety.

To the researcher's knowledge, there is no research yet that examined the effects of trust on safety performance, although general evidence of the relationship was reported. For instance, Kramer's (1999) study reported that trust stems from voluntary sociability of which, the behavioral outcome covers individuals' cooperation, acts extending beyond roles of employees, working based on a common goal, information sharing and being economical with the available resources. When this argument is extended towards the safety realm, the outcome indicates that employees trusting of management may be more willing to work in a safe manner, to ensure safety of peers and to adopt higher initiative for safety-related issues (Fukuyama, 1995).

Employees can be encouraged to maintain their employment in the organization for many reasons. Sometimes, employees stay owing to the fact that their leaving costs are too high or because they perceive that they are obliged to stay (Meyer & Allen, 1997). On top of this is the situation whereby the employees choose to remain working in the organization because they want to (Meyer & Allen, 1997), in which case, they display affective commitment to it.

Literature contends that individual elements of higher performance lead to higher levels of affective commitment. Mathieu and Zajac's (1990) study revealed that leadership predicted overall loyalty, and Bycio, Hackett, and Allen (1995) showed that employees who were treated considerately displayed greater degrees of commitment. Also, previous studies revealed that transformational leadership was a predictor of affective commitment (e.g., Barling *et al*., 1996; Barling, Moutinho *et al*., 2001). Moreover, Mathieu and Zajac (1990) reported that job characteristics predicted affective commitment to the organization and this also held true for role clarity. In other words, when employees are in control of their job and utilize their skills to do what is expected of them, they tend to have higher affective organizational commitment. Additionally, Ashford, Lee and Bobko (1989) demonstrated that employment security was related to higher affective commitment. Affective commitment was found in turn to predict work performance (Barling *et al*., 2001; Meyer, Allen, & Smith, 1993; Meyer, Paunonen, Gellatly, Goffin, & Jackson, 1989; Tannenbaum *et al*., 1991). It can therefore be presumed that management practices like the use of transformational leadership or the provision of quality work can promote worker's affective commitment to the organization and would

lead to improved safety performance, as an employee performance dimension. This is consistent with data showed by Kivimaki and Kalimo (1993) who found that employees who were more committed to the organization were more likely to experience safety incident compared to their counterparts who were not as committed. This contention is also supported by Hackett, Bycio and Hausdorf (1994) who found the relationship between affective commitment and occupational safety in their examination of 80 bus operators. They showed that affective commitment was significantly related to the annual number of accidents. Similarly, Parker *et al*. (2001) showed that a higher sense of affective commitment, which in turn predicted safer working of employees, was possible when jobs allowed employees to work in an autonomous manner and when quality communication existed in the organization. Finally, the role of management practices in maximizing affective commitment and occupational safety was also supported by Cohen and Ledford (1994) in their study involving 169 self-managed and traditional teams. They found organizational commitment to be negatively related to the number of work days missed following an accident. But they found organizational commitment not to be related to safety levels owing to the array of limitations in the safety data.

O'Dea and Flin (2001) looked at the association between the level of experience of managers and safety attitudes and behavior among 200 off-shore installation managers working in 157 the offshore UK oil and gas installations. They found that well-trained employees possessed a greater perception of the safety climate compared to their counterparts who lacked training. Krouse and Hidley (1989) also revealed that safety training improved workers' safety behavior in manufacturing and transportation

industries. They demonstrated that optimum safety behavior was more likely to encourage a climate of safety. Similarly, Hayes, Perander, Smecko, and Trask (1998) measured perceptions on workplace safety and revealed that highly experienced workers in safety training had a greater safety perception of the workplace environment compared to their counterparts who had low experience.

The same focus was adopted by Vechhio-sadus (2007) who delved into the relationship between safety culture and effective communication among Australian firms. This case study demonstrated the way an Australian organization responded to decreasing injury and accident and found training to be a crucial factor for successful communication process during injuries and accidents. Effective training programs were also found to affect worker skills. El-Mashaleh, Al-Smadi, Hyari, and Rababeh (2010) studied safety management in the Jordanian construction industry. Data were collected from 70 general contractors involved in every construction type. They showed that safety training weakness resulted in poor safety management and high rate of workplace injuries.

Although the above studies highlighted a significant impact of safety training on safety performance, some studies revealed contrasting findings. For instance, Ali *et al*. (2009) examined safety culture management practices and their impact on workplace injuries in Malaysia but found no significant association between safety training and decreased rate of occupational accidents and injuries. Similarly, Vredenburgh (2002) investigated the level to which safety training influenced safe work environment among hospital employees and found that training, on its own, was insufficient to decrease rates of

injury. He recommended that organizations should concentrate on an integrated program to develop workers' capacity of coping with workplace injuries and accidents.

2.12 Relationship between Effective Reporting System and Patient Safety

Numerous researchers concerned with patient safety used hospital records as a chief source of data (Aiken, Clarke, Sloane, Sochalski, & Silber, 2002; Aiken *et al*., 2003). However, depending exclusively on this source to gain data about patient safety was found to be inadequate because while record-based measurement can generate a complete list of health-threatening events, not all health-threatening events are reported (Potylycki *et al*., 2006). Barriers to reporting were subjected to investigations in a good body of researches. Barriers investigated include fear, the desire to save face (Chiang & Pepper, 2006) and fear of punishment (Kanse, van der Schaaf, Vrijland, & van, 2006). Consequently, it was recommended that further researches should follow subjective and anonymous evaluation that may encourage health care professionals to report fully the frequency of occurrence of health-threatening events (Laschinger & Leiter, 2006). Kutney-Lee and Kelly (2011), in their study in the USA that involved nurses in 316 hospitals in four states, found that adoption of health information technology might improve patient safety. But Encinosa and Bae (2011) showed that such adoption did not reduce the adverse events directly; rather it mitigated its repetition and reduce mortalities and readmission.

In another study conducted to evaluate the impact of using check list for recording consequences of 40000 surgical procedures in a university hospital, Rateau *et al*. (2011)

found that involvement of such recording and reporting system was effective in improving patient safety in the operation room. Similar result was reported by (Catchpole *et al*. (2007), who observed the cardiac and orthopedic surgeries' departments in England. They found that the most effective and sustainable way to improve safety was to capture the problems and report them in an attempt to analyze and identify factors associated with its occurrence. In Saudi Arabia, it was found that error reporting with feedback suggestions affected significantly patient safety improvements (Mwachofi *et al*., 2011).

According to (WHO, 2004), as many as 195,000 patients a year may be dying from easily preventable medical errors. In addition, fewer than 5% of health care errors were brought to the attention of the administrators of health services. Despite the initiatives launched to maximize reporting of medication errors (to rectify them), fewer than 50% were reported. In a recent case, intensive are nurses' errors were revealed to be frequent with over a quarter of the number of nurses noted to have committed at least a single error in a 28 day study. Even higher were the near errors committed, where nurses corrected themselves prior to committing an error. Nursing is generally related to patient safety and patient safety has been, until the recent times, been largely overlooked by scientific research (Collins, 2007).

2.13 Relationship between Organizational Climate and Patient Safety

Health care industry administrators and researchers have concentrated on safety and quality improvement in the last decade after major health care restructuring in acute care.

One of the motivations for performance enhancement in the US was the Institute of Medicine (IOM) series of reports written by the Committee on Quality of Health care in America on the requirement to improve patient safety (IOM, 2000), on the reduction of quality gap, and other reports that focused on quality enhancement efforts. IOM identified that enhancement of the organizational climate indicators (i.e. structures and processes) can be utilized to encourage and facilitate an enhanced environment of successful quality improvement. Such an environment could lead to improved patient and worker outcomes such as health care safety (Committee on the Work Environment for Nurses and Patient Safety, 2004; Ferlie & Shortell, 2001; IOM, 2000).

2.14 Relationship between Transformational Leadership, HPWS, Effective Reporting System, Organizational Climate and Patient Safety

Transformational leaders are able to engage followers in a manner that increases their morality to greater degrees (Bass, 1985; Bowles & Bowles, 2000; Dixon, 1999; Kouzes & Posner, 2007; McGuire & Kennerly, 2006; Prenkert & Ehnfors, 1997). Bass (1998) described transformational leaders as highly regarded and emulated by subordinates. Transformational leaders relay the vision and values of the firm in a way that followers are engaged to commit to the values as they collaboratively work to realize common vision and goals. This type of leaders shift their priorities to satisfy their followers' wants, needs, and motivations along with their own, and thus supporting mutual aims and goals (Jackson, Clements, Averill, & Zimbro, 2009).

In order to have leaders with transformational qualities, nurse managers should be promoted to raise and motivate their followers' goals and values to result in enhanced

patient outcomes and collaborative workplace (Burns, 1978). While examining the transformational leadership role in health care organizations, researchers defined the components in transformation and outcomes manifested in firms (Bass, 1985; Bowles & Bowles, 2000; Dixon, 1999; Kouzes & Posner, 2007; McGuire & Kennerly, 2006; Prekert & Ehnfors, 1997). A transformational leader inspires and encourages others to achieve outcomes that are beyond the followers' expectations. This type of leader is described by Kouzes and Posner (2002) and other authors as an individual who interacts with other individuals in a manner that encourages them in terms of morality and motivation (Bass & Avolio, 1994; Jackson *et al*., 2009; Kanter, 2003; McNeese-Smith, 1999). In turn, the feeling of increased morality and motivation heightens the standard of human behavior and performance, and leads to high ethical aspirations from both the leader and follower.

Similarly, Murphy (2005) stated that transformation leadership is akin to a domino-like, proliferating reaction, where the charisma of the leader motivates the followers' intellectual capacity and this empowers the clinician to provide optimum care that leads to superior patient care outcomes. Stated differently, empowered clinicians can become proponents of evidence-based practice and they are capable of delivering more effective patient care (Murphy, 2005). The leader's successful empowerment of his staff develops a culture of trust and collaboration in the workplace and encourages loyalty to the organizational goals and commitment to effective patient care. Transformational leadership entails the contribution of front-line clinicians in the decision making process, as evidenced in the Magnet program and it reinforces a higher collaboration level by

involving nurses within the health care field (Wolf, Triolo, & Ponte, 2008). According to Kramer and Schmalenberg (2005), nurses in the past were used to being task-oriented and following orders but in the 21st century, a different communication style that calls for a more collaborative environment is demanded. Based on the *American Nurses Credentialing Center* ANCC (2008), the Magnet program motivates a collaborative, best-practice environment where the power distance among the physicians and nurses is minimized and staff is encouraged to support an environment that is open to positive transformation. According to the Magnet philosophy, nurses' and clinicians' input are significant after directions from the administration and physicians. Similarly, the shared governance model reinforces nurse autonomy and their ability to contribute to organizational decision making (ANCC, 2008). The priority lies in the inclusion of staff nurses on the entire committees and to lead committees involved in decision making concern nursing practice and clinical environment on the basis of based practices and methods to offer optimum patient outcomes (ANA, 1988). This degree of staff involvement reinforces higher patient outcomes, and stresses the significance of the clinician's voice to enhance patient care.

The characteristics of leadership and clinical outcomes were examined in a study conducted by Xirasagar, Samuels, and Stoskopf (2005). They examined the association between medical director's leadership effectiveness and behaviors, and the clinical objectives realization postulating that the medical director would explain more the behaviors of transformational leadership than transactional and laissez-faire leadership behaviors. Over 660 executive directors at the primary care community health centers

were required to rate their medical director's leadership behaviors via the MLQ. They revealed that medical directors with transformational leadership styles were considered to be more effective than the other types of leaders and may assist in improving patient care quality.

In a related study, Capuano, Bokovoy, Hitchings and Houser (2005) explored the effect of leadership resources, nurse staffing workload, work environment, expertise of staff and the ability of staff upon the nurse-sensitive patient outcomes in Lehigh Valley Hospital and Health Network (LVHHN), a Magn *et al* located hospital. They made use of two instruments namely the Leadership Practices Inventory (LPI) and the Work Environment Scale (WES). The study involved the distribution of a survey among a sample of 283 nurses in 34 LVHHN units. They revealed a statistically significant correlation between patient outcomes and leadership that led to their promotion of management talent. They also demonstrated a significant relationship between nursing staff experience and patient outcomes.

In another related research, Jackson, Clements, Averill and Zimbro (2009) stressed on the importance of transforming health care through collaborative and engaging process. They stressed on the transformation of clinical environment and the effect on quality care and the work environment. Nurse leaders involved with the staff in supporting quality patient care encourage a work environment that is collegial with patient care at the core. These transformational practices improve leader-staff relationship that translates into patient optimal care. The team members' ability to cooperate among themselves via respect and

contribution will result in collaboration and quality patient care (Wolf, Triolo, & Ponte, 2008).

The transformational leadership concept is frequently coupled with transactional leadership in researches dedicated to examining patient outcomes and nursing care quality. Specifically, Bass (1985) took both into consideration and claimed that transactional entails tasks and responsibilities completion in exchange for rewards. On the other hand, a transformational leader acknowledges the role that reward exchange has and it stresses on the followers' engagement in terms of emotion and intellect in a manner that motivates them to reach greater degrees of performance. Prenkert and Ehnfors (1997) also investigated both transactional and transformational practices when exploring their relevance to organizational effectiveness. They explored organizational effectiveness and leadership practices of 23 head nurses and their assistants in a Swedish medium-sized hospital. They conducted interviews and employed a modified Bass multiple-leadership questionnaire (MLP) namely the Leadership-Nursing-Effectiveness Questionnaire (LNEQ). The questionnaire had three items that measured nursing care quality in Sweden. They hypothesized that nurse leaders who exposed staff to transformational and transactional leadership practices would contribute to a higher degree of organizational effectiveness and greater levels of quality nursing care. Patient outcomes related directly to the degree of nurse management engagement with the staff, as demonstrated by Rosengren, Athlin and Segesten (2007). They revealed that when nurse managers were available in their daily work, the staff perceived them as contributing to enhancing nursing practice and encouraging quality care.

Physicians and nurses as transformational leaders work in a collaborative fashion towards developing a strategy for quality patient care attribute with the intention of improving patient outcomes (Capuano *et al*., 2005; Dixon, 1999; Heuston & Wolf, 2011; IOM, 2011). In this regard Lukas, Holmes, Cohen, Restuccia, Cramer, Scwartz and Charns (2007) created a conceptual model to direct organizations to improve patient care. They examined the importance of the five elements for successful transformation of patient care with the inclusion of leadership commitment to quality and improvement initiatives in their engagement with staff to enhance patient care. They carried out 750 interviews among health care leaders in 12 health care systems in a span of three and a half years. They interviewed chief executive officer, quality improvement project teams, staff nurses and managers. Every system was personally observed seven times with 5-21 interviews conducted every time and every interview lasting from one to two hours. Lukas *et al*. identified five major elements as the drivers of the success of health care organizations when it comes to creating sustainable, greater dependable, evidence-based environments for patient care quality. They are patient care improvement, leadership commitment to quality and change, transformation impetus, consistency of plans, processes information and results, and finally, integration throughout organizational boundaries. In addition, they defined an organization as consisting four elements: mission and vision and strategies, culture reflecting values and norms, operational functions and processes supporting patient care, and infrastructure including technology, facilities and human resources. These components present the transformation undergone by the health care system over time.

Lukas *et al*. highlighted the importance of leadership involvement in the transformation of patient care and the organization. Despite the fact that leadership strategies started at the top, quality enhancement was higher when middle and frontline management were committed to quality and are involved in process redesign in an active manner. Leaders demonstrating their acceptance of the five elements of transformational support enhanced patient outcomes and facilitated higher stronger health care environment. Despite the insightful findings, this study highlighted two limitations – lack of common clinical performance indicators throughout the systems, and the choice of hospitals that are already known to be committed towards patient care enhancement. The authors stressed for more studies dedicated to organizational characteristics that are ripe for transformation and to comprehend the system redesign motivation.

Though substantial research supports the connection between leadership and organizational performance as well as human resource management and organizational performance, how they bring about this has so far yielded only ambivalent answers (Vogus, 2004). So far, research in this area has mostly pointed to the discretionary abilities of employees and interpersonal processes (Vogus, 2004). Yet there have been very few important studies carried out on this topic.

Waltson, Al-Omar, and Al-Mutari (2010) identified three aspects of organizational climate that had an effect on patient safety. They were management support, reporting system, and resource adequacy. Here, management support was about leadership and reporting system, a part of HPWS. The intermediate links between HPWS and organizational performance as identified by Herdman (2008) were skills of employees,

their attitudes and their behaviors. Early in this discussion, it was shown how important leadership is to developing organizational climate. Hence, it can be deduced that leadership through organizational climate can influence employee skills, attitudes, motivation and behaviors to attain good performance.

Combs *et al*., (2006) inferred in his research paper that performance enhancement brought about by HPWS is more in operational terms than financial terms. This is an aspect that can be crucial for a service sector as this sector demands a high level of operational performance as compared to financial performance (Combs *et al*., 2006). As service sector employees are closer in proximity to customers, any change in their performance, motivation and satisfaction will have an immediate bearing on the good will of the organization and customer satisfaction in turn (Combs *et al*., 2006,). In service sector, thus a better service climate is what is brought about by HPWS rather than mere financial gains (Combs *et al*., 2006).

Organizational climate can be expected to enhance the whole system qualitatively and this is where leadership will also experience a qualitative and positive change. Leadership could experience more flexibility while working with a workforce that has better KSAs and social exchange. Similarly, owing to the additive effects of HPWS in such an organizational climate, the high performance system itself could evolve to perform better. This is the area where this study aims to explore further.

Leadership also has to be examined in the specific context of the organizational climate of a health care organization that implements HPWS. Leaders generally have the

responsibility to lay down the vision of the firm and its design, to reinforce the soft structures channeling creative energies to desired outcomes, and to highlight the firm's core competencies and to explain how they can be manipulated to relate to the culture and mission of the organization (Altman, 2006). The soft structures mentioned here include organizational features that enable and guide behaviors of members, organizational culture involving shared values, attitudes (habits, belief structures, core competencies and mission) and sensitivities (Altman, 2006).

Combs *et al*. (2006) demonstrated that context matters in the application of HPWS. This is further proof to the importance of organizational climate for leadership and HPWS to progress towards better performance. Combs *et al*. (2006) further calculated that it is possible for organizations to increase their performance by 0.20 of a standardized unit for every unit increase in the use of HPWS, a result that can have wide implication for application level of HPWS. This study demonstrated a direct link between HPWS and performance and also showed that organizational climate was a crucial mediating factor (Combs *et al*., 2006). In a cross national survey in 12 countries in Europe, it was found that improving the hospital work environments was a cost-effective strategy to improve quality of health service in general and safety in particular that could have an impact on patient satisfaction (Aiken *et al*., 2012).

2.15 Mediating Effect of Organizational Climate

The mediating effect of organizational climate on the relationship between HRM system strength and organizational performance was first proposed by Bowen and Ostroff

(2004). Sanders *et al*. (2008) stated that a strong organizational climate was a term used by Bowen and Ostroff (2004) to refer to the climate strength and not its level. Climate level refers to the convergent perceptions ratings of particular work situation facet like safety, service, or HRM (Schneider, 1990, 2000; Klein, Conn, Smith, & Sorra, 2001; Schneider, Salvaggio, & Subrirats, 2002), and it is often measured by the mean of individual perception scores, whereas climate strength refers to the agreement level concerning the climate. Climate strength is measured via homogeneity statistics that relate to the aggregate members' perception like standard deviation and within-group correlations (Klein *et al*., 2001; Luria, 2008). Hence, climate strength more closely reflects Bowen and Ostroff's (2004) organizational climate concept as the shared perceptions of employees.

In the present study, HPWS climate strength is considered as the level of shared perceptions among HPWS within the organization, where high, established norms promote the conformity towards responses and boost skills facilitating suitable behavior and attitudes (Bowen & Ostroff, 2004; Johns, 2006; Mischel, 1983, 1977; Mischel & Peake, 1982). Based on the research dedicated to organizational climate, climate strength often moderates the outcomes (e.g., Ehrhart, 2004; Gonzalez-Roma, Peiro, & Tordera, 2002; Schneider et al., 2002). The relationship between outcomes and antecedents was stronger within a strong environment than a weak one.

As strong climate strength reflects the convergence of the perceptions of group members of the climate level, it indicates that related antecedents and outcomes relationships are inclined to be understood in similar manner by the members of the group (Mossholder,

Bennett, & Martin, 1998; Schneider *et al*., 2002; Yang, Massholder, & Peng, 2007). Furthermore, Ekvall's (1996) study revealed the mediating effect of organizational climate between organizational processes/operations (creating, motivation, co-ordination, controlling, communication, decision making and problem solving) and organization's resources (human resources/financial resources), and organizational outcomes.

Ever since the concept of psychological climate was proposed by Litwin and Stringer Jr. (1968), organizational climate has been addressed by a significant portion of the literature. Some of them addressed the mediating effect of organizational climate – a contention advocated by Burton *et al*. (2004), and Parker *et al*. (2003). Specifically, they contended that the HRM practice-firm performance is mediated by organizational climate which consequently leads to organizational outcome. Similarly, Lin, Madu, and Kuei (1999) revealed that organizational climate mediated between organizational systems and individual motivation and hence, it would directly impact behaviors linked to productivity. In the context of educational institute, Shahidi, Hadadnia, Seyedi, and Yusefi (2012) found that organizational climate mediated between knowledge management and organizational effectiveness. In a related study, Kayser, Walker, and Demaio (2000) examined the mediating impact of organizational climate on the relationship between social workers' change schema and their competence. In another study, Chuang and Liao (2010) confirmed the mediating impact of the unit climate on the HR performance-employee's practice and behavior relationship. Moreover, Hang-yue Ngo, Foley and Loi (2009) revealed that organizational climate mediated the association between family friendly work practices (FFWP) and firm-level outcome. Similarly,

Rogg, Schmidt, Shull and Schmitt (2001) involved 351 small business organizations in the USA to examine the mediating impact of organizational climate between HRM and organizational outcomes specifically customer satisfaction. They found that even with HRM significantly relating to customer satisfaction, the relationship was revealed to be indirect. It was also found that the relationship appeared less when the mediating effect of organizational climate was controlled (Rogg, Schmidt, Shull & Schmitt, 2001).

Finally, in the health care sector, the environment has bearing on outcomes such as patient safety (Ngo, Foley, & Loi, 2009). The dynamic work environment is what forms the organizational climate of the health service organization and it forms a guideline upon which employees to understand organizational life in the health care organizations (Ngo *et al*., 2009). Thus, organizational climate can be deemed among the top mediating factors in patient safety (Walston, Al-Omar, & Al-Mutari, 2010). Such mediation arises via HRM. Although several aspects related to HRM can impact patient safety, the present study focuses on specific elements that impact nurses' practices in public hospitals and its effect on patient safety.

2.16 Summary of the Chapter

This chapter has discussed the underpinning theory related to the present study, the variables connected to the dependent variable (i.e. patient safety), and the relationship between the related variables. This chapter has also discussed the mediating effect of organizational climate on the relationship between high performance work system and patient safety.

Despite the significant effect of HPWS on organizational performance, studies concerning the HPWS in the health field were very few. Most of the studies related to HPWS have focused on the manufacturing industry and few in the health care industry and even more so on its effect on patient safety. In other words, research concerning transformational leadership, HPWS, effective reporting system, and organizational climate on patient safety is limited especially in developing countries. In other words, the processes through which these variables interact to explain patient safety have not been well explored. The next chapter discusses in detail the theoretical framework and hypotheses.

CHAPTER THREE

RESARCH FRAMEWORK AND HYPOTHESES

3.1 Introduction

This chapter discusses the framework of the present study, theoretical background and formulation of the research hypotheses to achieve the objectives set earlier. To recap, the main aim of this study is to examine the antecedent effect of transformational leadership, high performance work system and effective reporting system on patient safety in the Ministry of Health hospitals in Saudi Arabia, and the role of organization climate as a mediator between high performance work system and patient safety.

3.2 Theoretical Framework

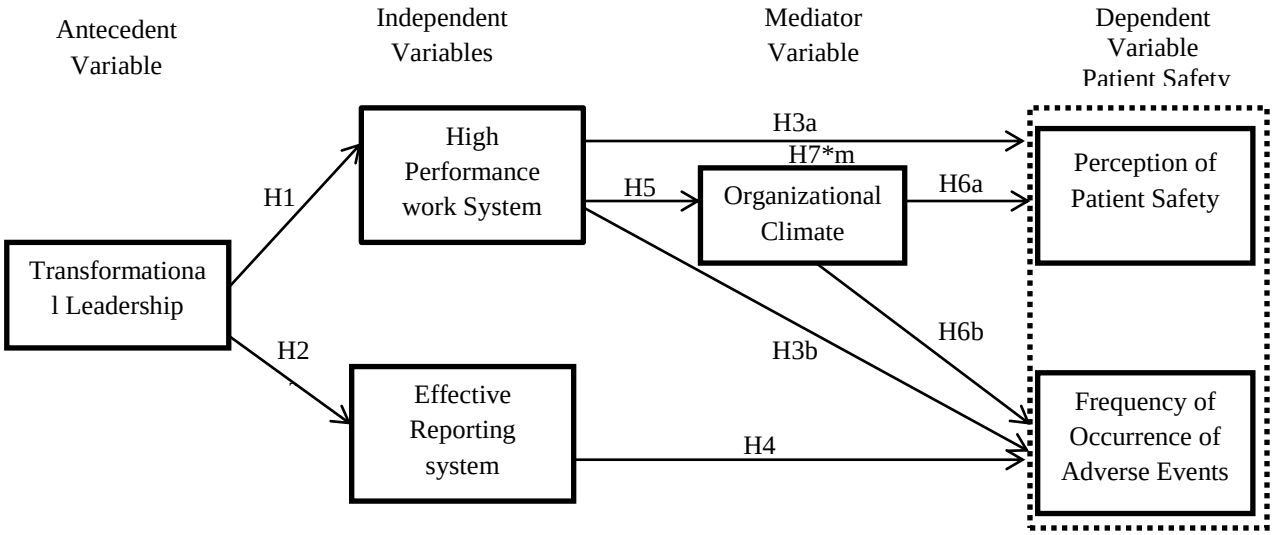
According to Vogus (2006), high performance work systems contribute to high quality outcomes for patients, particularly patient safety. He also argued that the impact of these high performance practices on patient safety outcomes could be mediated by the interactions among the nursing staff on hospital units (Vogus, 2006). Meanwhile, Takeuchi *et al*. (2009) hypothesized that high performance work systems are linked to organizational climate. They claimed that HPWS, which is concerned with employees, concentrates on motivational or skill acquisition practices which are assumed to provide a sense that the organization cares about its employees'success and well-being.

Reports from the Institute of Medicine (IOM) emphasized that leadership is essential to achieving goals related to quality of care and patient safety. The impact of leadership is

argued to be applicable to all levels of an organization including the executive managers to those working directly with patients (Page, 2004). Additionally, leadership, through its two-sided engagement between leaders and employees, helps to achieve a common goal (Northouse, 2012). It influences employees' behavior while simultaneously influencing their perceptions which ultimately lead to expectations of appropriate conduct that becomes incorporated into the organizational climate (Grojean, Resick, Dickson, & Smith, 2004). Within this complex interaction between various factors which affect patient safety, it is crucial for health care providers to consistently report events related to safety of the patients that are expected to empower a hospital's ability to learn from its experience (Tamuz *et al*., 2004). To encourage all staff to identify and report adverse incidents, it is necessary to raise awareness of employees about how to maintain safe environment for patients. In this context, the leaders are expected to play an important role in guiding and encouraging the staff to identify errors and adequately adhere to a transparent reporting system. To ensure success and continuity of this system, it should involve recognition of and rewarding the staff in return for their reporting (Coyle, 2005).

3.2.1 Research Framework

Figure 3.1 presents the overall representation of the theoretical framework that depicts the relationships between transformational leadership, HPWS, organizational climate, effective reporting system and patient safety. Based on the fragmented empirical evidence, the current study suggests a coherent model investigating these relationships in a single model.



*H7m: Hypothesis of mediation effect

Figure 3.1
Research framework

3.2.2 Hypotheses Development

3.2.2.1 Relationship between Transformational Leadership and HPWS

Despite the strong belief among researchers that many aspects of patient safety are predicted by the performance of the executive leaders, it is difficult to provide evidence for such claim especially when studies are conducted in isolation from other organizational variables (Bonnie, 2008). Leaders influence employees' performance in two ways: first, indirectly through their choice and design of management control systems and practices and, second, through their influence on employee behavior via behaviors such as, leading by example, and recognizing achievements (Boedker, Vidgen, & Meagher, 2011). In this respect, it is the influence of the leader on choice and design of

management system what concern; leaders are responsible for generating vision, setting values and putting the overall objectives (Clovard, 2003) that will be the responsibility of the managers to achieve it. Hence, based on this hierarchy of responsibilities and roles; the roles of leaders is anteceding the roles of managers within the managerial system in context of HPWS.

Researchers found that the HPWS through its cross-level hierarchy moderated the relationship between leadership and HR professionals, especially the factor of empowerment (Liao, 2011). Several explanations offer the basis of further studies and practical uses. For instance, effective leadership was found to be intimately related to safe patient care through the creation of teamwork, which is able to provide safe patient care (Manser, 2008). In Fiji, Stewart and Usher (2010) used a semi-structured questionnaire to interview senior nursing leaders and managers in Fiji to explore the relationship between leadership and patient safety. They revealed that four interacting issues pertaining to nursing leaders and managers impacted patient safety. They were empowerment of leaders and managers, increased focus on the patient, exploring conditions for front-line nurses, and improving nursing conditions. In this respect, it is assumed that the transformational leadership which is the type of leadership proposed to be examined in the current study plays an important role on the system in the organization. Moreover, from the vertical hierarchy of the managerial system, as leadership usually comes on top of the hierarchy and anteceding the operating system, therefore, the following hypothesis is tested in the current study:

Hypothesis 1: Transformational leadership is significantly related to and antecedes high performance work system (HPWS).

3.2.2.2 Relationship between Transformational Leadership and Effective Reporting System

Reporting and prevention of medical errors demand empowerment and advocacy of nursing leadership (Richardson & Storr, 2010). The demotivating leadership practices in Fiji can be taken as a negative example in this matter. The oppressive leadership practices in Fiji caused less reporting of medical errors in fear of retaliation, thereby resulting in reduction of patient safety (Stewart & Usher, 2010). In Saudi Arabia, Al-Saleh and Ramadan (2012) showed that medical errors in the healthcare system in Saudi Arabia were caused by heavy workload and lack of education/experience. Yet, worldwide data showed that medical errors can be prevented if there is a free and fair reporting procedure. Their study showed that only 6.9% of the respondents reported that they felt supported by hospital administration when reporting a medical error (Al-Saleh & Ramadan, 2012). The trust in leadership had been viewed as a crucial factor for effective reporting of medical errors (Vogus & Sutcliffe, 2007); this trust is essential in creating non punitive environment which is essential for encouraging health care professionals to report adverse events. Transformational leaders are capable to stem trust in their followers through many ways, one of which comes within the intellectual dimension which is characterizing this type of leadership; in addition they are able to triggering capabilities of flowers in recognizing problems and errors within the field of their work (Bass and Avolio, 1993). Accordingly, the current study hypothesizes the following:

Hypothesis 2: Transformational leadership is significantly related to and antecedes effective reporting system of adverse events in hospitals.

3.2.2.3 Relationship between High Performance Work System and Patient Safety

Previous studies showed a positive relationship between HPWS and better outcome (Takeuchi, Wang, Lepak, & Takeuchi, 2007). West *et al*. (2006) aimed to find out the relationship between the high performance policies and practices on health care outcome represented by standardized patient mortality rates in a sample of 52 hospitals in England. He found that the greater the use of a comprehensive set of high performance policies and practices, the better the outcome in terms of patient mortality. However, recent researches advocated that the establishment of a safer health care system necessitates more studies to be conducted to identify system factors that contribute to the occurrence of medical errors, as these are expected to provide foundations for process and system improvements to reduce those errors (Al-Saleh & Ramadan, 2012). Moreover, several authors (Aryee & Law, 2007; Takeuchi, Lepak, Wang, & Takeuchi, 2007) highlighted that existing studies do not providing adequate evidence on the relationship between HPWS, firm practice and proposed outcome. . In health care system, several outcomes are expected to occur, on top of these outcomes; patient safety is considered the most sensitive (Adhikari, 2010), in this respect, there are researches which considered patient safety as a main single outcome e.g. (Aiken *et al*., 2012; Teng *et al*., 2012; Wilson *et al*., 2012); meanwhile, some researchers regarded patient safety as being assessed through two main components namely: perception of patient safety and number of adverse events (El-Jardali, Jamal,

Dimassi, Ammar, & Tchaghchaghian, 2008). Accordingly, the current study hypothesizes the following set of hypotheses:

Hypothesis 3a: High performance work system (HPWS) has a significant positive effect on overall perception of patient safety.

Hypothesis 3b: High performance work system (HPWS) has a significant negative effect on frequency of occurrence of adverse events.

3.2.2.4 Relationship between Effective Reporting System and Patient Safety

According to Hosford (2007), medical error reporting is the most important prerequisite of patient safety. This claim supports the recommendation made by the Institute of Medicine (IOM), which suggested using patient safety reporting systems to evaluate why patients are harmed by medical care (Aspden, Corrigan, Wolcott, & Erickson, 2004). Despite the efforts made, most reporting systems are relatively new, concentrating on collecting events and little attention is paid on analyzing the reports and assessing how to use the data to improve patient safety (Leape, Berwick, & Bates, 2002; Pronovost *et al*., 2006). To emphasize its importance, researchers asserted that reporting systems with proper policies and procedures is considered one of the organizational elements of patient safety (Waltson, Al-Omar, & Al-Mutari, 2010). In a study conducted in Saudi Arabia, Alahmadi (2010) concluded that fearless climate for reporting errors and open communication could improve patient safety.

Although empirical researches showed the link between reporting system of medical errors and patient safety through the mitigation of adverse events based on lessons learned from previous events (Pronovost *et al*., 2006), the bias initiated from variance over time, amongst hospitals and clinical areas, by event type, and by perceived harm, necessitates further researches in different settings for better understanding of these variances (Pronovost *et al*., 2011). Effective reporting system in different forms had been found to be related to reduced number of adverse events ; for example using check list for surgical procedures (Rateau *et al*., 2011); the data retrieved and analyzed are usually used to identify factors associated with its occurrence (Catchpole *et al*., 2007) which are eventually reduce likelihood of its repetition what is known as learning from previous errors (Encinosa & Bae, 2011). From this platform this study hypothesizes that:

Hypothesis 4: Effective reporting system has a significant negative effect on frequency of occurrence of adverse events (patient safety).

3.2.2.5 Relationship between High Performance Work System and Organizational Climate

Schneider, White, and Paul (1998) were among the first to examine the relationship between HR practices and shared perceptions among employees about the organizational climate in service business. They hypothesized that employees' perceptions about the concern of the organization in providing high level of service quality depend on their perceptions about climate-based aspects in HR practices, which involve encouragement of employees in sharing of making decisions in addition to appropriate training that supports and facilitates service delivery.

Accordingly, Whitener (2001) asserted that HR practices inherently influence employees' perceptions of a unit's level of support. Later, and based on the previous assumptions, researchers argued that HR practices play a key role in shaping employee climate perceptions about their work environment (Zacharatos, Barling, & Iverson, 2005; Rogg, Schmidt, Shull, & Schmitt, 2001). For example, Ostroff and Bowen (2000) considered HR practices an essential predictor of the interpretation of the employees about the strategic concern of the organization. Although earlier researches indicated that different climates can be initiated within the same organization as a result of implementing different strategic practices (Schneider, 1990), other studies indicated that apart from these variations, there are still shared perception among employees working in the same unit especially in climate of service organizations (Borucki & Burke, 1999) and safety climate (Hofmann & Stetzer, 1996).

Although recent theory suggests that HPWS, through its way to increase performance, depend on the interaction with the internal social structures of the organization (Evans & Davis, 2005), results suggested that the relationship between HPWS and internal environment was not unidirectional. Therefore, it was assumed that the reverse relationship creates ambiguity in the relationship (Combs, Liu, Hall, & Ketchen, 2006). Extending the assumptions and results of the previous researches, this study argues that organizational climate is directly influenced by HPWS practices and thus, this study proposes the following:

Hypothesis 5: High performance work system (HPWS) is significantly related to organizational climate.

3.2.2.6 Relationship between Organizational Climate and Patient Safety

Many scholars believe that organizational climate is a significant factor in ensuring patient safety in health care systems (Asha, 2008; Walston, Al-Omar,& Al-Mutari, 2008). Basically, climate is a term that indicates shared employee perceptions which directly influences health care professionals to choose proper behaviors that enhance patient safety (Walston, Al-Omar,& Al-Mutari, 2008). From this definition, it is clear that the concept of organizational climate in health care systems is intimately related to patient safety. Hence, there is a growing concern about the impact of certain aspects of organizational climate on work stress and subsequent adverse events (Clarke, Rockett, Sloane, & Aiken, 2002; Gershon *et al*., 2000). For instance, Fogarty and McKeon (2006) tested a model with hypothesized links between organizational climate and unsafe medication administration among nurses in Australia. They found that the model provided a considerable fit to the data with organizational climate and its relationship with the magnitude of violations to instructions. In an international study aimed at investigating perception of the nurses about the organizational climate; it was found that nurses who were deprived from supportive climate are usually have lower insight about the safety climate (Malloy *et al*., 2009). In another quasi experimental study it was found that changing climate was associated with changes in performance and number of nosocomial infections (Larson, Early, Cloonan, Sugrue, & Parides, 2000). Based on these findings, i hypothesize that:

Hypothesis 6: Organizational climate significantly affects patient safety**.**

Hypothesis 6a: Organizational climate has a significant positive effect on overall perception of patient safety.

Hypothesis 6b: Organizational climate has a significant negative effect on frequency of occurrence of adverse events.

3.2.2.7 The Mediating Effect of Organizational Climate on the Relationship between High Performance Work System and Patient Safety

Several scholars postulated that the HRM technical systems, through its strategies and practices, influence organizational outcomes. The mechanisms describing this effect are mainly explained under social theories and factors such as social exchange and organizational climate, which impact employees' perceptions and behaviors (e.g,, Collins & Smith, 2006; Evans & Davis, 2005; Ostroff, 1993). Nevertheless, such propositions are still lagging behind the empirical evidence (Aryee & Law, 2007; Takeuchi *et al*., 2007). Takeuchi, Chen, and Lepak (2009) studied the mediating role of organizational climate between HPWS and outcome at the employee level in terms of attitude and satisfaction. They found that climate mediated the cross-level relationships of HPWS with job satisfaction and affective commitment.

There is possibility for the existence of other mediators through which HPWS influences outcomes (Ployhart, 2004; Ostroff & Bowen, 2000). For example, Messersmith, Patel, and Lepak (2011) showed that the outcome, which is the end result of performance, was influenced by the level of satisfaction and attitude that shape organizational citizen

behavior (OCB). These attitudes were created among the employees as a consequence of HPWS activities. Thus, the relationship between HPWS and outcome was mediated by OCB rather than organizational climate. Whether organizational climate can act as a mediating platform between HPWS and performance (patient safety, in the case of health care sector) remains largely an unanswered question; and this effect is considered one of the main contributions in the current study. Therefore, and as a contribution, the following hypothesis is tested.

Hypothesis 7: Organizational climate mediates the relationship between high performance work system (HPWS) and overall perception of patient safety.

3.3 Summary of the Chapter

The chapter has discussed the theoretical framework of the present research. Based on the extant literature, the framework is developed by showing the relationships between transformational leadership, HPWS, effective reporting system, organizational climate, and patient safety. Based on the framework, research hypotheses have been developed. In chapter four, the methodology used to conduct the study is presented.

CHAPTER FOUR

RESARCH DESIGN AND METHODOLOGY

4.1 Introduction

To recap, the main objectives of the present study are: (1) to examine the relationship between transformational leadership, HPWS, effective reporting system, and patient safety, and (2) to investigate the effect of organizational climate as a mediating variable on the relationship HPWS and overall perception of patient safety. To achieve the study objectives, this chapter presents the research design and methodology adopted. Also, it covers the issue of sampling, instrumentation, data collection, and data analysis.

4.2 Research Design

A research design describes how the research is conducted to accomplish the research objectives and answer the research questions. In other words, a research design outlines data collection, measurement and analysis (Cooper & Schindler, 2008). Similarly, Zikmund, Babin, Carr, and Griffin (2010) defined a research defined as a master plan outlining the methods and procedures for data collection and analysis. Additionally, the research design assists the researcher in the appropriate utilization of sufficient resources through the selection of suitable methodology (Cooper & Schindler, 2008).

This study incorporates different variables (transformational leadership, high performance work system, effective reporting system, organization climate, and patient safety) in the proposed model, and quantifies the strength and direction of the relationship

between transformational leadership as an antecedent variable of high performance work system and effective reporting system, and the mediating effect of organizational climate on the relationship between High Performance work System and overall perception of Patient safety. To achieve the objectives, a quantitative approach was adopted for many reasons. Firstly, it is primarily deductive and is best suited to prove or disprove a hypothesis and its analysis is ideal for a single-subject analysis as well as for correlational studies (Cooper, Schindler, & Sun, 2003). Such approach also serves to document behavior, knowledge, opinion or attitude (Cooper & Schindler, 2008). It also helps to achieve the objectives of the study through an empirical assessment involving numerical measurement and different analysis methods (Zikmund, *et al*., 2010). Consistent with this approach, a cross-sectional survey design was used.

To collect data, self-administered questionnaire was employed as it is the most commonly used method in a survey research (Bourque & Fielder, 2003; Cooper & Schindler, 2008; De Vaus, 2002), as it provides a description of what is going on or to examine the reasons for specific business activity (Zikmund *et al*., 2010). A questionnaire is an organized set of questions which are used by respondents to note down their answers about defined variables (Hair, Money, Samouel, & Page, 2007).

The suitability of the survey approach adopted in this study was based on the intention of the researcher to gather the opinions of participants while at the same time to take the benefit of the inherited merits of this kind of approach as being a fast, inexpensive, efficient and accurate means of assessing population data (Zikmund *et al*., 2010).

Moreover, since most survey studies are descriptive, the term survey is frequently related to quantitative findings (Zikmund *et al*., 2010).

The unit of analysis in any study is represented by the level of aggregation of the data collected during the data analysis state (Sekaran, 2003). Because the present study is interested in investigating patient safety in Saudi public hospitals, thus the level of analysis is organisational. This means that the data were collected and aggregated at the organisational level based on data obtained from the nurse managers selected. Summary of the research design shown below in figure 4.1

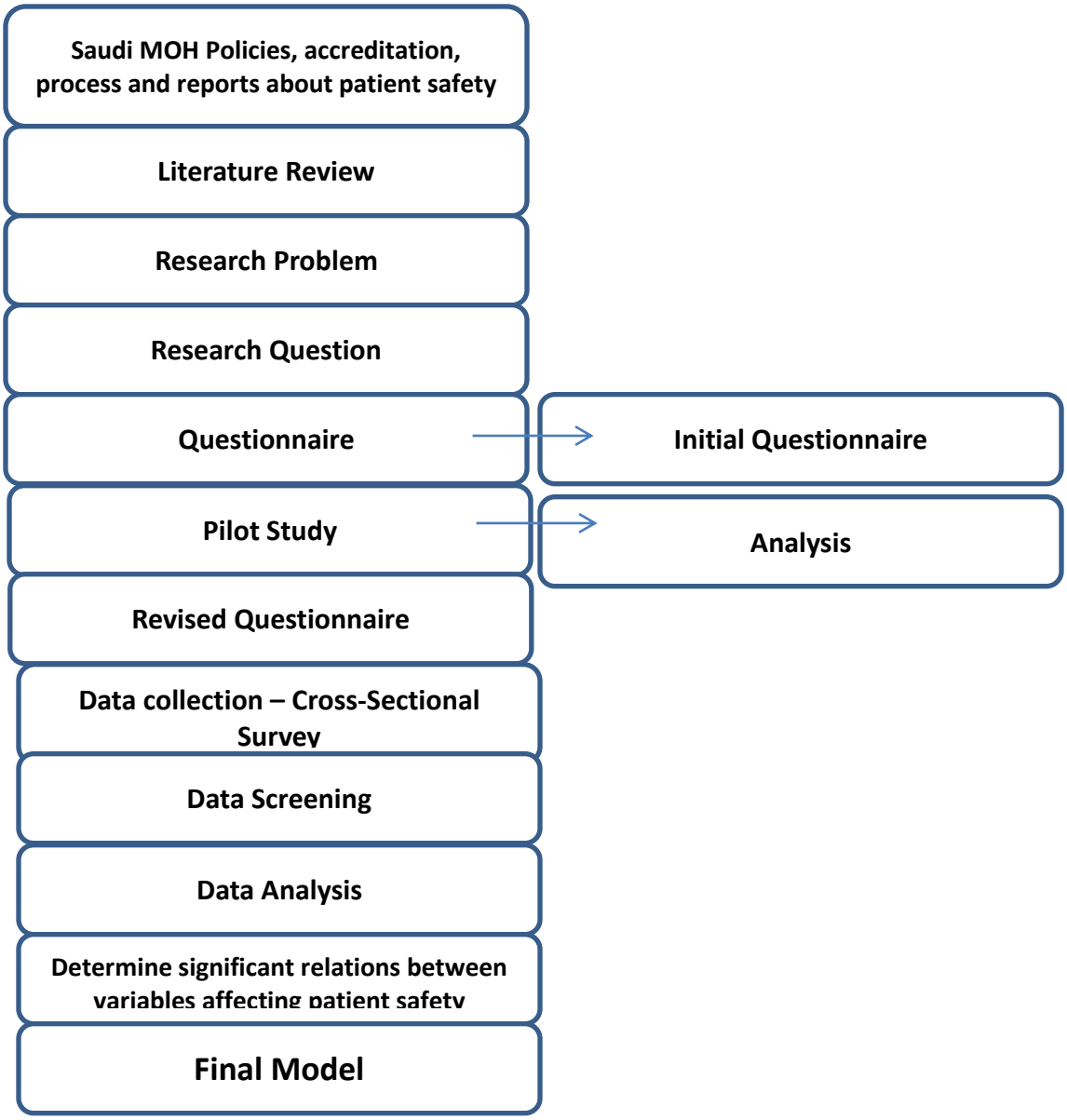


Figure 4.1

Summary of the research design

4.3 Population, Sample Size and Sample Technique

This section explains the population of the study, the sample size, and the sampling selection technique.

4.3.1 Population

Population is defined by Cooper and Schindler (2008) as those people, events, or records that contain the desired information and can answer the measurement questions. As the present study is interested to investigate the factors affecting patient safety in Saudi public hospitals, the study naturally focused on public hospitals in Saudi Arabia. Several agencies provide health care services in Saudi Arabia. Amongst these, the MOH is the major provider with 60% of the hospitals and 58.6% of the beds being under its management. Other governmental agencies manage 9.3% of the hospitals and 18.7% of the beds while the private sector oversees 30.7% of the hospitals and 22.7% of the beds (Health Statistical Year Book, Ministry of Health, 2011). Table 4.1 shows the relevant statistics.

Table 4.1
Hospitals and Beds by Health Providers in Saudi Arabia

	Providers			
Facilities	**MOH**	**Other governmental agencies**	**Private agencies**	**Total**
Hospitals	251(60.0%)	39(9.3%)	130(30.7%)	420
Beds	34450(58.6%)	10948(18.7%)	13298(22.7%)	58696

Source: Health Statistical Year Book, Ministry of Health (2011).

The Ministry of Health (MOH) was established with the primary aim of providing health care to Saudi citizens in three levels namely, primary, secondary, and tertiary care. In both rural and urban areas, there are approximately 2,094 primary health care centers providing health care and monitoring other health care facilities. The secondary level of

health care is provided by 192 general hospitals while tertiary health care services are provided by 59 specialist hospitals across the Kingdom.

On the basis of the report published by the Health Statistical Year book (2011), 251 MOH hospitals are present in Saudi Arabia, which are located in 20 health regions (see Table 4.2).

Table 4.2
Total Number of Specialized and General Hospital in Ministry of Health Hospitals by Region, 2011

Region	Specialized hospitals	General Hospitals	Total
Riyadh	10	35	45
Makkah	2	8	10
Jeddah	6	6	12
Taif	3	10	13
Medinah	4	16	20
Qaseem	3	14	17
Eastern	4	14	18
Al-Ahsa	4	5	9
Hafr Al-Baten	2	3	5
Aseer	3	13	16
Bishah	1	6	7
Tabouk	2	9	11
Ha'il	2	9	11
Northern	1	6	7
Jazan	2	16	18
Najran	3	8	11
Al-Baha	4	6	10
Al-Jouf	2	4	6
Qurayyat	1	2	3
Qunfudah	0	2	2
Total	59	192	251

Source: (MOH Statistics, 2011).

4.3.2 Sample Size and Sampling Technique

According to Gay *et al*. (2006), sampling is the process through which participants are selected in a way that they will be representative for whole population from which they are withdrawn. The sample size is described as the number of units needed to get accurate results (Fink, 2002). In addition, Gay and Diehl (1992) contended that the selection of an appropriate sample allows generalizability of the analysis outcome. Sampling is often conducted instead of collecting data from every population element for practicality (Sekaran, 2003; Zikmund, 2003), as sampling result in a more successful outcome owing to the minimization of fatigue and errors resulting in data collection particularly when the number of elements is considerably large (Sekaran, 2003).

According to Pallant (2007), scholars have not reached a consensus concerning sample size but the majority of them tend to agree that the a larger sample is better than a small one as the latter often lead to inaccurate correlation coefficients and hence defeats the study purpose. Zikmund *et al*. (2010) claimed that if the sample size is large, errors are minimized. Hence, relatively large samples ensure statistical significance. According to the rule of thumb, a sample size from 30-500 is deemed effective according to the type of sample design and research questions (Roscoe, 1975). In multivariate researches, a sample size should be significantly larger or ten times larger than the study variables. In this study, there are five variables and hence the required sample size should be 50 or over.

Random sampling entails the selection of samples from a homogenous population. The first step in random sampling is to ensure homogeneity in the population by dividing the non-homogenous population into a homogenous one. This is possible by using stratified random sampling where the population is categorized into homogeneous groups called strata prior to sample selection (Remenyi, Williams, Money, & Swartz, 1998). The present study utilized a dual stratified sampling strategy where in two distinct types of hospitals from different areas were chosen. This strategy was justified as follows:

1. Owing to the presence of general and specialist hospitals in the 20 regions, the population can be considered heterogeneous. The sample has to be homogenous in order for the examination of the impact of transformational leadership, HPWS, effective reporting system and organizational climate upon patient safety in all Saudi public hospitals to be effective. To do so, the population of the study was categorized into two strata; the first one included general hospitals and the other one specialist hospitals.
2. This Stratified strategy of sampling would guarantee that the entire identifiable strata are considered (Hussey & Hussey, 1997), so that each stratum is displayed proportionally within the sample (Saunders, Lewis, & Thornhill, 2000).
3. This strategy would lead to minimized estimation error.
4. Stratification of the elements of the population into groupings assists in reducing the cost per every observation in the survey.
5. Sub-groups may exist within the population which can be sub-divided into identifiable strata.

In the context of a quantitative study, getting accurate results entails a reasonably large sample size so that a subset of the larger population can be created (Krejcie & Morgan, 1970, as cited in Sekaran, 2003). In this study, the desired sample size was 152 hospitals covering approximately 60.6% of the total population (Krejcie & Morgan, 1970, as cited in Sekaran, 2003). After the employment of stratified random sampling, 116 general hospitals and 36 specialist hospitals were included in the study. The sample size in each region was determined by the application of stratified random sampling on the master's list. The hospital distribution within each stratum is presented in Table 4.3.

Following the selection of hospitals to constitute the sample and following their categorization into groups and regions, the researcher employed random sampling to determine the subjects. Specifically, a random number table lists random numbers where the quantity of random numbers desired can be chosen along with the maximum and minimum values of the numbers in the table.

Table 4.3
Total Number of Hospital in Ministry of Health Hospitals by Region (2011)

Region	**Specialized hospitals**	**General hospitals**	**% specialized hospitals in region to total specialized hospitals**	**% general hospitals in region to total general hospitals**	**Sample of specialized hospitals per region**	**Sample of general hospitals per region**	**Sample size**
Riyadh	10	35	16.9	18.2	6	21	27
Makkah	2	8	3.4	4.2	1	5	6
Jeddah	6	6	10.2	3.1	4	4	8
Taif	3	10	5.1	5.2	2	6	8
Medinah	4	16	6.8	8.3	2	10	12
Qaseem	3	14	5.1	7.3	2	8	10
Eastern	4	14	6.8	7.3	2	8	11
Al-Ahsa	4	5	6.8	2.6	2	3	5
Hafr Al-Baten	2	3	3.4	1.6	1	2	3
Aseer	3	13	5.1	6.8	2	8	10
Bishah	1	6	1.7	3.1	1	4	5
Tabouk	2	9	3.4	4.7	1	5	6

Table 4.3(Continued)

Region	Specialized hospitals	General hospitals	% specialized hospitals in region to total specialized hospitals	% general hospitals in region to total general hospitals	Sample of specialized hospitals per region	Sample of general hospitals per region	Sample size
Ha'il	2	9	3.4	4.7	1	5	6
Northern	1	6	1.7	3.1	1	4	5
Jazan	2	16	3.4	8.3	1	10	11
Najran	3	8	5.1	4.2	2	5	7
Al-Baha	4	6	6.8	3.1	2	4	6
Al-Jouf	2	4	3.4	2.1	1	2	3
Qurayyat	1	2	1.7	1.0	1	1	2
Qunfudah	0	2	0.0	1.0	0	1	1
Total	59	192	100.0	100.0	36	116	152

Source: MOH Statistics (2011)

4.3.3 Participants

Participants who have the relevant information are eligible to answer or respond to the questionnaires. This is an essential criterion for any research because if the wrong person answers the questions, the research can be rendered invalid and misleading. Survey research usually looks for an individual as a key informant for the research but there are no defined rules or standards for selecting the informant (Remenyi, Williams, Money, & Swartz, 2012). This selection procedure is typically subjective and can be flexible. Nevertheless, to make the research effective and to obtain useful information, the selection of the right respondent is important.

Nurse managers were perceived to create professional nurse practice environments to support the provision of quality patient outcomes (Rosengren, Athlin & Segesten, 2007; Warshawsky, *et al*., 2013). Pillay (2011), and Jasper and Crossan (2012) referred to nurse managers is the largest group of operational managers in hospitals and as such, they are central to implementing strategic objectives. Similarly, McCallin and Frankson (2010)

referred to nurse managers as the ones in the center of the action when a strategy requires implementation. Nurse managers have a pivotal role in influencing hospital strategies and planning activities to keep them aligned with the competitive environment. Pioneering studies, like the one conducted by Aroian *et al*. (1997), stated that nurse managers are considered the top hospital asset. In fact, the health care organizations' success and failures largely depend on them (Jasper & Crossan, 2012) as they control most of the operations in health care organizations.

Practically, a nurse manager believed in nurses' responsibility for patient safety (Al-Rifai, 2008; Kohn *et al*., 2000; Page, 2004), and responsible to carry out duties in various healthcare organizational levels. He/she is a registered nurse who holds a 24 hour responsibility of one or more than one operation areas within the nursing services and has over five nurses under his/her supervision. The nurse manager leads the staff and is accountable to a hospital director. A nurse manager often coordinates his/her activities between various areas and provides clinical and administrative leadership and expertise. He/she provides an atmosphere characterized by interactive management and development of collegial associations among nurses. He/she has a key responsibility in implementing the vision, mission, philosophy, core values; evidence-based practice and organizational standards within his/her defined responsibility areas (ANA, 2009). Therefore, a nurse manager, and nurse managers assistant were approporiate to be the respondents in the current study.

4.4 Data Collection Procedure

Once the questionnaire was finalized and its validity tested, data collection was initiated. The questionnaires were distributed in the selected hospitals. A cover letter was enclosed with the questionnaire informing the respondents of the purpose and the authenticity of the research. The approval of Medical Research Ethical Committee, MREC from the MOH was ensured with the detailed confidentiality clause before conducting the study. A sample of the questionnaire was given to the Ministry of Health for their review so that they understand exactly what the research was about in order to secure their approval and get access and cooperation from the director of each hospital to help distribute the questionnaires.

4.5 Operationalization of Measurements /Instruments

The measurement of each study variable is discussed in this section. A total of five main variables were involved including the demographic variables.

The responses were made on a five-point Likert scale as it is the most widely used scale in recent researches (Gwinner, 2006). Moreover, it is also able to measure accurately (Hair, Black, Babin, & Anderson, 2010) and to test the proposed hypotheses (DeVellis, 1991). The respondents were able to choose a neutral rating in case some of them felt neutrally about some topics. Neutrality, according to Gwinner (2006), can be described as a legitimate opinion existing among respondents.

4.5.1 Patient Safety

In the present study, patient safety was measured on two dimensions: frequency of occurrence of adverse events and overall of perception of patient safety.

4.5.1.1 Frequency of Occurrence of Adverse Events

Six items adapted from Teng *et al*. (2009) were used to measure the frequency of occurrence of medication errors, patient falls, infections, injuries because of care, delayed patient care, and incomplete or incorrect documentation. The items were measured on a five-point Likert scale, ranging from '1' "not at all" to '5' "frequently, if not always". Participants were asked to indicate how frequently these events occurred. The internal consistency of the scale was reported to exceed 0.76 (Teng *et al*., 2009). The items are shown in Table 4.4.

Table 4.4
Measurement Items of Frequency of Occurrence of Adverse Events

No.	Items
1.	Injuries because of care happen in the past year?
2.	Patient falls occur in the past year?
3.	Nosocomial infections occur in the past year?
4.	Medication errors occur in the past year?
5.	Delayed patient care happen in the past year?
6.	Incomplete or incorrect documentation occur in the past year?

Source: Teng *et al*. (2009)

4.5.1.2 Overall Perception of Patient Safety

Eight items adapted from Ramanujam, Abrahamson, and Anderson (2007) dealing with nurse managers' perceptions of patient safety designed on a five-point Likert scale, ranging from '1' "strongly disagree" to '5' "strongly agree" was used. Reliability analysis was reported to yield a Cronbach's alpha of .874. Participants were asked to indicate their level of agreement or disagreement to the items. Two items were negatively worded. They were: "Employees in this hospital do not value correcting the root causes of patient safety problems", and "Employees in this hospital care about improving patient safety only when a patient has been seriously harmed". The items of perception of patient safety are shown in Table 4.5.

Table 4.5
Measurement Items of the Patient Safety Perception

No.	Items
1.	Employees in this hospital view patient safety as their highest priority.
2.	Employees in this hospital think highly of anyone who volunteers for initiatives to improve patient safety.
3.	In this hospital, we always seek opportunities to make procedures safer for patients.
4.	In this hospital, everyone, junior and senior, is expected to take responsibility for improving patient safety.
5.	Employees in this hospital do not value correcting the root causes of patient safety problems.
6.	In this hospital, Nurses who continuously try to improve patient safety are valued.
7.	Employees in this hospital care about improving patient safety only when a patient has been seriously harmed.
8.	If someone close to me needs medical help, I will confidently recommend treatment at this hospital.

Source: Ramanujam *et al*. (2007); Teng *et al*. (2009)

4.5.2 Transformational Leadership

The multi-factor leadership questionnaire (MLQ) was developed by Avolio and Bass where in the latest version (Form-5x-short) encapsulates the full leadership range (transformational, transactional, and laissez-faire). This scale was adopted in the present research because of its extensive development and validation and because it is deemed to be among the most effective instruments used for the evaluation of leadership styles. The reliability of all items for every leadership factor scale ranged from 0.74-0.94 (Avolio & Bass, 1995) and went over the standard reliability cut off of 0.70, as reported by Fornell and Larcker (1981). Furthermore, the current MLQ version considers the suggestions and criticisms of several authors and is therefore deemed more comprehensive than the pioneering version (MLQ Form-5R). The current form was revealed to be effective even in studies concerning diverse cultures like Asian and European (Avolio & Bass, 1995).

A total of 20 items were included to address transformational leadership with each item rated on a five-point scale, ranging from '1' "not at all" to '5' "frequently, if not always". Transformational leadership items covered inspirational motivation, idealized influence behavior, intellectual stimulation, individual consideration, and attributes of idealized influence. Participants were asked to indicate how frequently each statement fits them. The items are shown Table 4.5.

Table 4.5

Measurement Items of Transformational Leadership

No.	Items
1.	Re-examines critical assumptions to question whether they are appropriate.
2.	Talks about his/her most important values and beliefs.
3.	Seeks differing perspectives when solving problems.
4.	Talks optimistically about the future.
5.	Instills pride in me for being associated with him/her.
6.	Talks enthusiastically about what needs to be accomplished.
7.	Specifies the importance of having a strong sense of purpose.
8.	Spends time teaching and coaching.
9.	Goes beyond self-interest for the good of the group.
10.	Treats me as an individual rather than a member of a group.
11.	Acts in ways that builds my respect.
12.	Considers the moral and ethical consequences of decisions.
13.	Displays a sense of power and confidence.
14.	Articulates a compelling vision of the future.
15.	Considers me as having different needs, abilities, and aspirations from others.
16.	Gets me to look at problems from many different angles.
17.	Helps me to develop my strengths.
18.	Suggests new ways of looking at how to complete assignments.
19.	Emphasizes the importance of having a collective sense of mission.
20.	Expresses confidence that goals will be achieved.

Source: Avolio and Bass (1995).

4.5.3 High Performance Work System

A total of 15 items were used to measure five practices of HPWS (recruitment and hiring, training, employment security, performance appraisal, and participation). These items were measured on a five-point scale, ranging from '1' “never used” to '5' "always used”. Participants were asked to indicate the extent to which that practices is used. The items are shown in Table 4.7.

Table 4.7
Measurement Items of HPWS

Dimensions	Items
Recruitment and hiring	1. Applicants undergo structured interviews (job related questions, same questions asked of all applicants, rating scales) before being hired 2. Applicants for jobs take formal tests (paper and pencil or work sample) before being hired. 3. Applicants for positions undergo more than one interview before being hired.
Training	1. Formal training programs are used to teach new hires the skills they need to perform the job. 2. Hospital offer orientation programs that train employees on the history and processes of the ministry of health. 3. Hospital has a mentoring system to help develop employees.
Performance appraisal	1. Hospital use performance appraisals to plan skill development and training for future advancement. 2. Hospital seeks input from multiple employees when doing performance appraisal evaluations of employees. 3. Employees in this hospital regularly (at least once per year) receive a formal evaluation of their performance.
Employment security	1. Providing employment security to employees is a priority in this hospital. 2. Job security is almost guaranteed to employees in this hospital. 3. If the ministry of health faces reduction in the number of jobs, employees in this hospital would be the last to get cut.
Participation	1. Hospital involves employees in formal participation programs such as quality improvement programs, roundtable discussions and suggestion systems. 2. Hospital has formalized programs to encourage employee participation. 3. Employees in this hospital are often asked to participate in decisions.

Source: Herdman (2008)

4.5.4 Effective Reporting System

Assessment of effective reporting system was conducted by using nine items developed by Walston *et al*. (2010). The items were found to possess high coefficient alpha reliability estimates at 0.86 (Walston, Al-Omar, & Al-Mutari, 2010). The items were measured on a five-point Likert scale, ranging from '1' "strongly disagree" to '5' "strongly agree". Participants were asked to indicate their level of agreement or disagreement on the items. The items are shown in Table 4.8.

Table 4.8
Measurement Items of Effective Reporting System

No.	Items
1	Reporting is not structured to punish.
2	Reporting errors lead to positive change.
3	Medical professions believe in the importance of reporting errors.
4	Nurses believe in the importance of reporting near-misses.
5	Information from reported errors is used to improve safety.
6	Nurses are required to report errors event/incident occurs in this hospital.
7	This hospital has a rewarding system for reporting errors.
8	Nurses are encouraged to report events/incidents related to harming patient safety.
9	Reporting system procedures are clear to nurses.

Source: Walston *et al*. (2010)

4.5.5 Organizational Climate

Seven-item scale developed by Burton *et al*. (2004) was shown by previous studies to be of high reliability, as it was reported to have a coefficient of 0.82 in the study conducted by Ngo, Foley, and Loi (2009). The scale takes a generalized approach to climate and tries to capture various aspects of employee's perceptions about their organizations including trust, morale, rewards equitability, leader credibility, conflict, scapegoating, and resistance to change. The current study adopted these items measured on a five-point Likert scale, ranging from '1' "strongly disagree" to '5' "strongly agree". Participants were

asked to indicate the level of agreement or disagreement to the items. Of all items, two were negatively worded. They were with regards to conflict, “There are large disagreements among nurses while hospital management makes decision," and with respect to resistance to change, "It is often difficult to carry out organizational changes". The items are shown in Table 4.9.

Table 4.9
Measurement Items of Organizational climate

No.	Items
1.	Trust: Our employees can always trust each other.
2.	Morale**:** Our employees have a high working morale.
3.	Rewards equitability: Our employees find that rewards for their efforts are given in an equitable fashion.
4.	Leader credibility: Employees consider leadership to be credible.
5.	Conflict: There are large disagreements among employees while we make decisions.
6.	Scapegoating: It is good sense that employees take responsibility when something goes wrong.
7.	Resistance to change: It is often difficult to carry out organizational changes

Source: Burton *et al*. (2004)

4.5.6 Demographic Variables

Participants were requested to provide their personal information including their gender, age, nationality, marital status, academic qualification, monthly income, years of experience as a hospital nurse manager, total years of experience in the hospital, and the type of clinical tasks involved. A categorical scale was used to measure all the demographic variables.

4.6 Content Validity of the Instruments

The most commonly used instrument for data collection is the self-administered questionnaire (Schwab, 2005), which is not only cost-effective but also enables the researcher to gather information and opinion in a short time (Bourque & Fielder, 2003). But, it is also crucial to ensure the validity of the questionnaire. Validity of an instrument refers to "the extent to which the instrument measures what it is supposed to measure" (Leedy & Ormrod, 2005, p. 31), and content validity of the questionnaire is usually determined by expert judgment (Gay, Mills, & Airasian, 2006). In this study, the researcher presented the questionnaire to five reviewers to validate it and ensure its adequacy, comprehensibility, quality, clarity, comfort level, and appropriateness of the questions for the topic. The reversed responses were considered while coding the answers of the participants and scoring the data for statistical analysis.

4.7 Translation of the Questionnaire

The questionnaire translation was prepared by two bilingual experts (English/Arabic) in order to ensure lexical equivalence (Brislin, 1970). The questionnaire was translated into Arabic language using a back translation technique in order to achieve the measurement equalvalences in both languages (Brislin, 1970). First, the English version questionnaire was translated into Arabic by a native Arab who is an expert in both languages. Then, the Arabic version was back translated again into English by another bilingual expert in order to solve any differences.

4.8 Pilot Study

A pilot study refers to a project of small scale entailing data gathering from respondents who are similar in characteristics as the study's target respondents (Zikmunder *et al*., 2010). A pilot study guides the researcher for the actual study and allows the researcher to gauge the ambiguous aspects of the study in order to determine whether or not the procedures are feasible. The importance of pilot studies lie in their refining of the survey questions, reducing the study flaws (Zikmund *et al*., 2010) and enhancing the questionnaires (Neuman, 1997). A pilot study is generally employed on 25-100 subjects (Cooper & Schindler, 2008).

Prior to carrying out the pilot study, the initial questionnaire was exposed to many revision stages for clarification and correction of mistakes. Additionally, it is a significant step to conduct a pilot study by collecting data from the same sample source in order to test the measurements validity and reliability (Sproull, 2004).

In the present study, five staff members comprising three nurse managers and two doctors were requested to review the questionnaire and to provide feedback on the questions. They were encouraged to provide comments with regards to the clarity of the questions. Consequently, some questions were revised for further clarification and to maximize the data quality. A total of 60 nurse managers working in public hospitals in the Kingdom were involved in the pilot study. On the basis of collected data, the reliability and validity of the instrument were confirmed as shown in table 4.10 and 4.11.

The pilot study was carried out to enhance the measurements prior to distributing the actual study questionnaire, to rewrite ambiguous questions, to decide on the required time of response, and to determine the measures reliability and validity. The steps explained in the following sub-sections were taken in the pilot test.

4.8.1 Measuring the Validity and Reliability of the Measurements

4.8.1.1 Validity Analysis

If measurements have a good degree of reliability but not validity, the former can be a pre-requisite of good measurement although it does not indicate goodness of measure (Churchill, 1979; Sekaran, 2003). The present study tested the measurement validity prior to the stage of data collection. In this regard, Nunnally and Bernstein (1994) described validity as the level to which the measurement is capable of measuring what it is expected to measure. In studies dedicated to methodology, several types of validity measures have been cited. Literature, specifically concerning behavioral science, showed that content and construct validity are the most extensively utilized measures of validity (Kerlinger & Lee, 2000; Leary, 2004; Nunnally & Bernstein, 1994).

Generally, content validity refers to the level to which the measure appears to measure what it is expected to measure. Thus, content validity is primarily based on the experts' evalution to guarantee that the measure items consists of items that measure the entire aspects of the construct. To guarantee content validity of the measurements, the items were adopted from existing measures reported with good psychometric properties. Moreover, extensive discussions with academicians and practitioners were carried out to

validate items of the construct and the questionnaire was distributed to potential respondents for their revision and assessment for feedback. Moreover, construct validity was ascrertained using factor analysis through Varimax rotation. The use of factor analysis enabled the identification of the items explaining the construct. Factor analysis was run for each construct in a separate manner.

The initial step involved the checking of the factor analysis applicability and appropriateness through Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's sphericity test. Kaiser (1974) proposed the KMO index to compare the level of observed correlation coefficient to that of the partial correlation coefficient. The smaller the total partial correlation between the variable pairs, the nearer will be the KMO value to one and thus making it more suitable for factor analysis. Kaiser (1974) also stated that the KMO measure nearer to one is marvelous (0.90), around 0.80 is meritorious, around 0.70 is middling and around 0.60 is mediocre. On the other hand, if the KMO measure is around 0.50 it is considered miserable, and if it is below that, it is unacceptable.

Result of the pilot study, presented in Table 4.10, shows that the KMO measure varied from 0.610 to 0.797, with only two dimensions possessing low KMO, namely, individualized consideration (0.469) and performance appraisal (0.586). The researcher decided to keep them without deleting any items since they had only three to four items. Factor analysis was deemed appropriate.

The next step involved the examination of the items' factor loadings and their comparison to the least benchmark of 0.50, as proposed by Hair *et al*. (2010) for

significant item loading. On this basis, items possessing factor loadings lower than 0.50 were considered meaningless and were thus deleted from their constructs.

Table 4.10
Factor Analysis and Reliability of the Final Instrument (Pilot Study)

Constructs	No. of Items	Items	Factor loading	KMO	Eigen values	% of variance
Recruitment/hiring	3	recruit1	0.879	0.732	2.354	78.476
		recruit2	0.876			
		recruit3	0.902			
Training	3	train1	0.951	0.770	2.692	89.730
		train2	0.940			
		train3	0.950			
Performance appraisal	3	perf1	0.738	0.586	2.018	67.253
		perf2	0.806			
		perf3	0.907			
Employment security	3	emp1	0.928	0.663	2.317	77.217
		emp2	0.916			
		emp3	0.784			
Participation	3	part1	0.846	0.704	2.179	72.636
		part2	0.880			
		part3	0.830			
Idealized influence (attribute)	4	l1	0.846	0.797	2.892	72.298
		l2	0.846			
		l3	0.882			
		l4	0.826			
Idealized influence (behavior)	4	l5	0.653	0.626	2.684	67.109
		l6	0.880			
		l7	0.850			
		l8	0.873			
Inspirational motivation	4	l9	0.893	0.649	3.060	76.491
		l10	0.814			
		l11	0.928			
		l12	0.860			
Intellectual stimulation	4	l13	0.754	0.793	2.819	70.474
		l14	0.874			
		l15	0.845			
		l16	0.880			
Individualized consideration.	4	l17	0.721	0.469	2.614	65.341
		l18	0.898			
		l19	0.818			
		l20	0.787			

Table 4.10 (Continued)

Constructs	No. of Items	Items	Factor loading	KMO	Eigen values	% of variance
Organizational climate	7	clim1	0.929	0.730	3.906	55.805
		clim2	0.627			
		clim3	0.762			
		clim4	0.909			
		clim6	0.817			
		clim7	0.611			
Effective reporting system	9	rep1	0.760	0.773	5.569	61.877
		rep2	0.847			
		rep3	0.745			
		rep4	0.846			
		rep5	0.935			
		rep6	0.762			
		rep8	0.865			
		rep9	0.826			
Frequency of occurrence of adverse events	6	saf1	0.664	0.619	3.353	55.889
		saf2	0.800			
		safe3	0.650			
		saf4	0.732			
		saf5	0.750			
		saf6	0.867			
Perceptions of patient safety	8	saft1	0.776	0.610	2.497	41.615
		saft2	0.832			
		saft3	0.482			

*Item are as ordered in the questionnaire set

As evident from Table 4.10, majority of the items had factor loadings over 0.60. One item related to organizational climate had a factor loading of 0.451, which was eventually deleted and one item related to effective reporting system had a factor loading of 0.345, which was also deleted. The perceptions of patient safety factor comprised five items, with factor loading below 0.4 (saft4, saft5, saft6, saft7, saft8). They were also eventually

deleted. After deleting the five items with inadequate loading, the Cronbach's alpha of the perceptions of patient factor was 0.753 (prior to the deletion, it was 0.392). The remaining factor loadings of the constructs were over 0.70.

4.7.1.2 Reliability Analysis

Reliability refers to the measure of the stability level among the construct measurements (Hair *et al*., 2010). In order to evaluate the consistency of the items measuring the construct, the reliability analysis of the instrument was carried out. The instrument reliability is its capability to generate the same results over and over. According to Sekaran (2003), four methods are generally utilized by researchers to ensure the reliability of their instruments. They are test-retest methods, alternative form methods, split-half method, and the Cronbach's alpha coefficient method, the latter of which is the most extensively used. Accordingly, the present study employed the Cronbach's alpha coefficient to test the instruments reliability. Additionally, Cronbach's alpha tests the reliability strength. Its practical nature explains its extensive use, specifically among studies concerning social science.

A alpha coefficient shows the items stability in measuring the same construct. A high coefficient indicates high consistency of the construct items. In an effort to determine the suitable and standard cut off point of Cronbach's alpha coefficient, Nunnally (1978) proposed minimum standards; for instance, coefficients of 0.7, 0.8 and 0.9 are for exploratory, basic and critical issue-based researches, respectively. Similarly, Cortina (1993) proposed a rule of thumb with 0.9 coefficient as excellent, 0.8-0.9 as good, 0.7-0.8

as acceptable, 0.6-0.7 as questionable and 0.5-0.6 poor. Finally, coefficient of less than 0.5 is deemed unacceptable.

The reliability of the intended measures was tested using Cronbach alpha analysis for each separate construct. To maximize the reliability coefficient, some items were deleted as discussed earlier. The items were deleted based on the item-construct analysis to assist in determining the ones with the most minimal contribution. Table 4.11 shows the result.

Table 4.11
Reliability Analysis of Pilot Study

Constructs	No. of original items	Cronbach's alpha	Item deleted*	Cronbach's alpha if item deleted
Recruitment/hiring	3	.857	nil	.857
Training	3	.943	nil	.943
Performance appraisal	3	.752	nil	.752
Job security	3	.852	nil	.852
Idealized influence (attribute)	3	.869	nil	.869
Participation	4	.811	nil	.811
Idealized influence (behavior)	4	.831	nil	.831
Inspirational motivation	4	.892	nil	.892
Intellectual stimulation	4	.846	nil	.846
Individualized consideration.	4	.806	nil	.806
Organizational climate	7	.864	1	.878
Effective reporting system	9	.905	1	.930
Frequency of occurrence of adverse events	6	.835	nil	.835
Perceptions of patient safety	8	.392	5	.753

*Number of items sequenced in the questionnaire

Table 4.11 shows that the Cronbach's alpha coefficients of all the study constructs had an acceptable level of internal consistency. Most of the values went over Nunnally and Beinstein's (1994) threshold of 0.70. Hair *et al*. (2010) and Cortina (1993) argued for 0.60 to be the minimum acceptable level of Cronbach's alpha for construct reliability. Five items were deleted to enhance the internal consistency of the perceptions of patient safety, one item was deleted to enhance effective reporting system, and finally one construct was deleted to enhance the organizational climate construct.

4.9 Data Analysis and Partial Least Squares (PLS) Technique

PLS SEM technique is called a second generation structural equation modeling (Wold, 1982). The relatively new technique works well with structural equation models that contain latent variables and a series of cause-and-effect relationships (Gustafsson & Johnson, 2004). The PLS SEM approach is a good and flexible tool for statistical model building as well as prediction (Ringle, Wende, & Will, 2012).

Specifically, the PLS technique was used in this study for the following reasons. Firstly, structural equations models have been demonstrated to be superior models that perform estimations better than regressions for assessing mediation (Brown, 1997; Iacobucci, Saldanha, & Deng, 2007; Mattanah, Hancock, & Brand 2004; Preacher & Hayes, 2004). It has been reported that PLS SEM accounts for measurement error and can provide more accurate estimates of mediating effects (Chin, 1998). Secondly, PLS path modeling becomes more appropriate for real world applications and more advantageous to use when models are complex (Fornell & Bookstein, 1982; Hulland, 1999). The soft

modeling assumptions of PLS technique (i.e., ability to flexibly develop and validate complex models) gives it the advantage of estimating large complex models (Akter *et al*., 2011). The current study examined the relationships among six variables of patient safety (perceptions and frequency of occurrence of adverse events), transformational leadership, high performance work system, effective reporting system and organizational climate. Because of the complex relationships involved, the use of PLS SEM techniques was appropriate for better prediction.

Thirdly, in most social science studies, data tend to have normality problem (Osborne, 2010) and PLS path modeling does not necessarily require data to be normal (Chin, 1998). In other words, PLS treats non-normal data relatively well. By and large, PLS path modeling was selected for this study to help avoid any normality problem that might arise in the course of data analysis for the current study. Fourthly, PLS SEM offers more meaningful and valid results, while other methods of analysis such as a software package like SPSS often result in less clear conclusions and would require several separate analyses (Bollen, 1989). Additionally, Tabachnick and Fidel (2007) stated that SEM is one of the most powerful statistical tools in social and behavioral sciences that have the ability to test several relationships simultaneously.

In this study, the SmartPLS path modeling was used to establish measurement and structural models. Measurement model was used to explain or assess constructs' reliability and validity of the current study. Secondly, structural model was used to conduct bivariate correlation analysis and simultaneous regressions analyses to establish correlations and relationship effects among the constructs under investigation.

Additionally, using the PLS mechanisms of algorism and bootstrapping, the mediating effects of organizational climate (mediator) on the relationship between high performance work system and overall perception of patient safety were possible to be analyzed.

Hair *et al*. (2010) stated that partial least squares (PLS) is now well known as an alternative to SEM method, which includes LISREL and AMOS, among other programs. The PLS path modeling is more suited to complex models such as those with hierarchical constructs (with a complete disaggregation method), mediating and moderating impacts (Chin, Marcolin, & Newsted, 2003). The PLS modeling has to be employed in the initial stage of theoretical development to assess and validate exploratory models. In addition, one of its powerful features is its suitability for prediction-oriented research where the methodology helps researchers to concentrate on the explanation of endogenous constructs. Another feature of PLS is its vulnerability to multicollinearity. In addition, PLS determines the measurement models and structural models through multiple regressions, whose estimates can be vulnerable to issues of multicollinearity. Lastly, the PLS path modeling can be utilized in reflective as well as formative measurement models (Chin 1998; Chin & Newsted 1999).

4.9.1 Steps of PLS Analysis

Since SmartPLS cannot take natural Excel file format directly, the dataset has to be converted into csv file format. So the researcher did that by going to the "File" menu in Excel and then chose "CSV (Comma Delimited)" as the file format type to save. Then the researcher followed the steps of PLS below.

4.9.1.1 Convergent Validity of the Measurements

Convergent validity is defined as the degree to which a set of variables converge in measuring a particular concept (Hair *et al*., 2010). To establish convergent validity, many criteria namely the factor loadings, composite reliability (CR) and average variance extracted (AVE) are used simultaneously, as suggested by Hair *et al*. (2010). Item's loading and individual item loadings greater than 0.7, are considered adequate (Fornell & Larcker, 1981). In addition, items must have loadings more than 0.5, which is the acceptable level suggested in the multivariate analysis literature (Hair *et al*., 2010). The second aspect of convergent validity is composite reliability which indicates the degree to which a set of items consistently indicates the latent construct (Hair *et al*., 2010). The recommended value is 0.7 (Fornell & Larcker, 1981; Hair *et al*., 2010).

To confirm the convergent validity of the outer model, the values of the average variance extracted (AVE) were examined. The average variance extracted (AVE) reflects the average of the variance extracted among a set of items relatively to the variance shared with the measurement errors. More specifically, AVE measures the variance captured by the indicators in relative to the variance assignable to the measurement errors. If the AVE values are at least 0.5, this suggests these set of items has an adequate convergence in measuring the concern construct (Barclay *et al*., 1995).

4.9.1.2 Discriminant Validity of the Measures

To confirm the construct validity of the outer model, it is necessary to establish discriminant validity. This step is mandatory prior to testing the hypotheses through the

path analysis. The discriminant validity of the measures shows the degree to which items differentiate among constructs. Simply, it shows that the items used different constructs do not overlap. Therefore, constructs although correlated, yet measure distinct concepts. This meaning was clearly explained by Compeau, Higgins, and Huff (1999) where they concluded that if the discriminant validity of the measures was established, it means that the shared variance between each construct and its measures should be greater than the variance shared among distinct constructs.

The discriminant validity of the measures was confirmed employing the method of Fornell and Larcker (1981), as the square root of average variance extracted (AVE) for all the constructs were placed at the diagonal elements of the correlation matrix, As the diagonal elements were higher than the other element of the row and column in which they are located, this confirms the discriminant validity of the outer model. Having established the construct validity of the outer model, it can be assumed that the obtained results pertaining to the hypotheses testing should be valid and reliable.

4.9.1.3 Goodness of Fit of the Model

Unlike the Covariance Based Structural Equation Modeling CBSEM approach, PLS Structural Equation Modeling has only one measure of goodness of fit. As defined by Tenenhaus *et al*. (2005), a global fit measure (GoF) for PLS path modeling is the geometric mean of the average communality and average R^2 for the endogenous constructs. Therefore, the goodness of fit measure accounts for the variance extracted by both outer and inner models. To support the validity of the PLS model, GoF value was

estimated according to the guidelines set up by Wetzels, Odekerken-Schroder, and Van Oppen (2009), as given in the following formula.

$$Gof = \sqrt{(\overline{R^2} \times \overline{AVE})}$$

4.9.1.4 Predictive Relevance of the Model

As it is widely known in the literature of multivariate data analysis, R^2 of the endogenous variable accounts for the variance of a particular variable that is explained by the predictor variables. Therefore, the magnitude of the R^2 for the endogenous variables was considered as an indicator of predictive power of the model. In addition to that, the sample reuse technique was applied as developed by Stone (1975) and Geisser (1975) to confirm the predictive validity of the model. It was argued by Wold (1982) that the sample's reuse technique to fit very well the PLS modeling approach (Götz, Liehr-Gobbers, & Krafft, 2011).

More specifically, the predictive relevance of the model can be examined by the Stone–Geisser non-parametric test (Chin, 1998; Fornell & Cha, 1994; Geisser, 1975; Stone, 1975). This can be performed employing the blindfolding procedure embedded in Smart-PLS 2.0 package. Blindfolding procedure is designed to remove some of the data and to handle them as missing values to estimate the parameters. Next, the estimated parameters are then used to reconstruct the raw data that are assumed previously missing. As a result, the blindfolding procedure produces general cross-validating metrics Q2. In general, there are different forms of Q2 that can be obtained based on the form of desired

prediction. A cross-validated communality Q2 is obtained when the data points are predicted using the underlying latent variable scores. Whereas, if the prediction of the data points is obtained by the LVs that predict the block in question, then a cross-validated redundancy Q2 is the output.

As indicated by Fornell and Cha (1994), the cross-validated redundancy measure can be a reliable indicator of the predictive relevance of the examined model. If the test criterion, redundant communality was found to be larger than 0 for all the endogenous variables, the model is considered to have predictive validity, otherwise, the predictive relevance of the model cannot be concluded (Fornell & Cha, 1994).

4.9.2 Assessment of the Inner Model and Hypotheses Testing Procedures

4.9.2.1 Path Coefficient Estimation

The PLS path modeling method is a commonly used method in the estimation of causal relationships in the field of path models involving latent constructs that are measured indirectly by many indicators. Previous studies by Wold (1982), Lohmöller (1989), Chin (1998), Tenenhaus, Vinzi, Chatelin, and Lauro (2005) explained the methodological basis and methods for outcome evaluation and provided some instances of this methodology.

A PLS path model's description is provided by two models; a measurement model linking the manifest variables (MVs) to their latent variables (LVs), and a structural model that relates endogenous LVs to other LVs. The measurement model is referred to as the outer model while the structural model is referred to as the inner one. The inner

model describes the relation between unobserved or latent variables while the outer one describes the relation between a latent variable and its manifest variable (Hair at al., 2014). An example of a PLS path model is shown in Figure 5.1 The general design of a PLS presents a recursive inner model that is exposed to predictor specifications. Therefore, the inner model comprises a causal chain system and includes two varying types of outer models; the reflective and the formative measurement models are represented respectively. The choice of a particular outer mode is explained by theoretical rationale (Diamantopoulos & Winklhofer, 2001).

4.9.2.2 Structural Path Significance in Bootstrapping

SmartPLS can generate T-statistics for significance testing of both the inner and outer model, using a procedure called bootstrapping. In this procedure, a large number of subsamples (e.g., 5000) are taken from the original sample with replacement to give bootstrap standard errors, which in turn gives approximate T-values for significance testing of the structural path. The Bootstrap result approximates the normality of data (Hair *et al*., 2011).

To be able to conclude whether the path coefficients are statistically significant or not, this study employed the bootstrapping techniques embedded with SmartPLS2.0. To run bootstrapping of this model, the researcher used 500 samples with number of cases equal to the observations out of 217 cases. More specifically, the T-values accompanying each path coefficient was generated using the bootstrapping technique and subsequently the p values were generated, as reported in chapter five.

4.10 Conclusion

This chapter has described the theoretical framework used in this research. The framework and subsequent hypotheses were developed based on previous research works done on the topic that analyzed the relationships between transformational leadership, HPWS, effective reporting system, organization climate and patient safety. Also this chapter has discussed how the present study was conducted. The current study involved public hospitals in Saudi Arabia, as identified within the Ministry of Health located in 20 health regions across the country. In the next chapter, findings of the data analyses are presented.

CHAPTER FIVE

DATA ANALYSIS AND RESULTS

5.1 Introduction

In the previous chapter, an explanation on how the present study was practically carried out was offered. Based on the data analyzed, this chapter presents showed the results of analysis. This study first looks at the demographic profile of the respondents. In addition to that, the study describes the main variables and tests the non-response bias, descriptive statistics, multicollinearity test and normality. The recent study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) to assess the outer measurement model as a prerequisite for the inner structure model assessment; the outer model is the part of the model that describes the relationships between the latent variables and their indicators. The inner model is the part of the model that describes the relationships between the latent variables that make up the model.

Specifically, this study established the goodness of the outer model related to the constructs of this study, namely, high performance work system which has five dimensions (Performance Appraisal, Job Security, Participation, Recruitment/Hiring and Training), transformational leadership which also has five dimensions (Idealized influence (attribute), idealized influence (behaviour), individualized consideration, inspirational motivation and intellectual stimulation), overall perception of patient safety, frequency of occurrence of adverse events, effective reporting system, and organizational

climate. Once the construct validity was established, the next process was to examine the quality of the structural model and hypothesis testing was reported.

5.2 Survey Instrument Response Rate and Data Collection Process

For this study, the unit of analysis was hospitals in Saudi Arabia. A survey package was mailed to 182 hospitals on December 29th, 2013. Two surveys were sent to each hospital to be answered by the nurse manager and nurse managers' assistant. Direct phone calls to remind the respondents of their delayed response were made to increase the response rate, as recommended by Sekaran (2006). Furthermore, reminder was carried out in Jan 18th. Also, another reminder by direct calls was placed on Feb 4th and by the end of March 2014, 145 hospitals were sent 254 surveys, out of 254 surveys, 202 came from 112 general hospitals and 52 came from 33 specialist hospitals. The actions taken, yielded a total of 145 hospitals for a response rate of 77 percent. According to Sekaran (2006), this is an acceptable rate. Table 5.1 presents the response rate.

Table 5.1
Sample Study Response Rate (n = 145)

Questionnaire response	**Frequency**	**Rate**
Response rate (Hospitals)	145 out of 182	77%

5.3 Demographic Profile of Respondents

Table 5.2 provides background information of the respondents who participated in the survey. As respondents, nurses managers and nurses manager assistants, the characteristics of the respondents include gender, nationality, country of origin, age,

educational qualification, type of hospital, marital status, basic salary per month, years of experience as a hospital nurse manager or assistant, and years working in the hospital.

Table 5.2
Respondents' Demographic Information (n = 217)

Categories		Frequency	Percentage
Gender			
•	Male	30	13.8
•	Female	187	86.2
Nationality			
•	Saudi	80	36.9
•	Non Saudi	137	63.1
Age			
•	25 years or below	29	13.4
•	26-30 years	59	27.2
•	31-35 years	43	19.8
•	More than 35 years	86	39.6
l qualifications			
•	Diploma in nursing	79	36.4
•	Bachelor's degree in nursing	113	52.1
•	Master's degree in nursing	25	11.5
•	Doctoral degree in nursing	0	.0
Type of hospital			
•	General	196	90.3
•	Specialist	21	9.7
Total number of years working in this hospital			
•	0-5 years	100	46.1
•	6-10 years	59	27.2
•	11-15 years	37	17.1
•	More than 15 years	21	9.7

Table 5.2 (Continued)

Categories	Frequency	Percentage
Marital status		
• Single	40	18.4
• Married	165	76.0
• Divorced	6	2.8
• Widowed	6	2.8
Basic salary per month (SR)		
• Less than SR3000	90	41.5
• SR3000-SR6999	72	33.2
• SR7000-SR10999	55	25.3
Total number of years working in your current position		
• 0-5 years	76	35.0
• 6-10 years	45	20.7
• 11-15 years	84	38.7
• More than 15 years	12	5.5

As shown, majority of the respondents were female (86.2%). Slightly more than half of them were non-Saudi (63.1%), married (76%), and earned a basic salary of less than SR3000 (41.5%). Close to half of the respondents had a minimum work experience of less than five years (46.1%), and majority of them were more than 35 years. Majority had bachelor degree in nursing (52.1%), worked as a hospital nurse manager for 11 to 15 years (38.7%), and worked in general hospitals (90.3%).

In general, the description of the sample mirrored somewhat the characteristics of the general population of nurse managers in the Kingdom in particular with respect to the nationality of nurses and their gender. For example, female nurses in the Kingdom

represented 75.18% of the total nurses under the purview of the Ministry of Health, while foreign nurses represented 55.86% of the total nurses (MOH, 2010).

Sample representativeness is a key requirement for using stratified sampling to meet the objectives that the sample is representative of the population of interest (Hail *et al*., 2010). Whether upward classification, looking for relationships, and simplifying data, stratified sampling results are not generalizable from the sample unless representativeness is established (Hair *et al*., 2010). All issues concerned with data collection were addressed adequately to ensure that the sample was representative of the public hospitals. Thus, the sample findings can be safely extended to the population of public hospitals in Saudi.

5.4 Testing Non-Response Bias

As indicated earlier, this study employed a survey questionnaire for data collection. The questionnaires were self-administered in all the locations. However, it was necessary to conduct non-response bias for the reasons that many respondents responded only after many reminders and repeated visits were given.

In order to assess non-response bias, t-test was conducted to compare early and late respondents on the main variables. Following the suggestions of Armstrong and Overton (1977), and Kannan, Tan, Handfield, and Ghosh (1999), if the differences between late and early respondent were found to be significant, non-response bias may occur and hence may invalidate the finding.

In this study, 53 respondents were classified as late response while 164 as early response on all dimensions recruitment/hiring, training, performance appraisal, job security, idealized influence (attribute), participation, idealized influence (behavior), inspirational motivation, intellectual stimulation, individualized consideration, effective reporting system, organizational climate, frequency of adverse events, and overall perception of patient safety. Table 5.3 and Table 5.4 provide the results of the independent sample t-test.

Table 5.3
Group Statistics of Independent Sample t-test

Variables	**Early/late responses**	**N**	**Mean**	**Std. Deviation**	**Std. error mean**
Recruitment/hiring	Early responses	164	3.659	1.320	.103
	Late responses	53	3.648	1.227	.169
Training	Early responses	164	4.037	1.139	.089
	Late responses	53	3.818	1.199	.165
Performance appraisal	Early responses	164	3.967	.910	.071
	Late responses	53	3.780	.827	.114
Job security	Early responses	164	2.662	1.390	.109
	Late responses	53	2.783	1.350	.185
Idealized influence (attribute)	Early responses	164	3.188	.941	.074
	Late responses	53	3.255	.951	.131
Participation	Early responses	164	3.154	.865	.068
	Late responses	53	3.189	.738	.101
Idealized influence (behavior)	Early responses	164	3.348	.934	.073
	Late responses	53	3.401	.858	.118
Inspirational motivation	Early responses	164	3.480	.854	.067
	Late responses	53	3.439	.714	.098

Table 5.3 (Continued)

Variables	Early/late responses	N	Mean	Std. Deviation	Std. error mean
Intellectual stimulation	Early responses	164	3.573	.938	.073
	Late responses	53	3.651	.815	.112
Individualized consideration.	Early responses	164	3.585	.882	.069
	Late responses	53	3.675	.637	.087
Effective reporting system	Early responses	164	3.748	.864	.067
	Late responses	53	3.724	.631	.087
Organizational climate	Early responses	164	3.108	.722	.056
	Late responses	53	3.135	.630	.087
Frequency of adverse events	Early responses	164	2.572	.680	.053
	Late responses	53	2.676	.558	.077
perception of patient safety	Early responses	164	3.790	.840	.066
	Late responses	53	3.613	.984	.135

Table 5.3 shows small differences of the mean scores between the two groups on each dimension, which were not significant. It can be safely said that the two groups had similar characteristics and hence non-response bias was not a threat (refer also the Levene's test for equality of variance in Table 5.4).

Table 5.4
Independent Sample t-test Results for Non-Response Bias

Constructs	Early/late responses	Levene's test for equality of variances		t-test for equality of means		
		F	Sig.	t	df	Sig.
Recruitment/hiring	Early responses	.857	.356	.052	215.000	.958
	Late responses			.054	93.960	.957
Training	Early responses	.084	.773	1.201	215.000	.231
	Late responses			1.170	84.424	.245
Performance appraisal	Early responses	.790	.375	1.333	215.000	.184
	Late responses			1.400	95.982	.165
Job security	Early responses	.196	.658	-.557	215.000	.578
	Late responses			-.565	90.362	.573
Idealized influence (attribute)	Early responses	.103	.749	-.451	215.000	.653
	Late responses			-.448	87.321	.655
Participation	Early responses	2.033	.155	-.259	215.000	.796
	Late responses			-.281	102.035	.779
Idealized influence (behavior)	Early responses	.613	.435	-.369	215.000	.713
	Late responses			-.385	95.032	.701
Inspirational motivation	Early responses	.990	.321	.320	215.000	.750
	Late responses			.350	104.083	.727
Intellectual stimulation	Early responses	.427	.514	-.541	215.000	.589
	Late responses			-.581	100.173	.562
Individualized consideration.	Early responses	5.555	.019	-.681	215.000	.497
	Late responses			-.801	121.536	.425
Effective reporting system	Early responses	3.624	.058	.190	215.000	.850
	Late responses			.222	120.033	.824
Organizational climate	Early responses	2.882	.091	-.242	215.000	.809
	Late responses			-.259	99.712	.796
Frequency of adverse events	Early responses	1.725	.190	-1.008	215.000	.314
	Late responses			-1.115	106.077	.267
Perceived patient safety	Early responses	1.427	.234	1.273	215.000	.204
	Late responses			1.175	78.007	.244

5.5 Descriptive Statistics Analysis

Sekaran and Bougie (2010) maintained that the descriptive statistics of the dimensions through mean, standard deviation, and variance can give the researcher a detailed idea of how the respondents in the study have responded to the questions in the questionnaire. Consequently, a descriptive analysis was conducted to describe and summarize the main characteristics of a data set from the respondents' perspective on every variables of namely Performance Appraisal, Job Security, Participation, Recruitment/Hiring and Training, Idealized influence (attribute), idealized influence (behaviour), individualized consideration, inspirational motivation and intellectual stimulation, overall perception of patient safety, frequency of occurrence of adverse events, effective reporting system, and organizational climate.

Table 5.5 shows the findings of descriptive statistics of the variables. Most of the variables have the mean above the average ranged from 3.115 to 3.983 and the standard deviation ranged from 0.652 to 1.378. Only two variables have means below than the average which are Job security with mean of 2.691 and Frequency of adverse events with mean of 2.598. The minimum and maximum responses on the variables are also presented in Table 5.5. As a result, it was found that on the basis of respondents' opinions most of the variables are above the acceptance level of implementation. In other words, almost all dimensions are above satisfactory level.

Table 5.5
Descriptive Statistics of the Constructs (n = 217)

Constructs	Minimum	Maximum	Mean	Std. deviation
Recruitment/hiring	1	5	3.656	1.295
Training	1	5	3.983	1.155
Performance appraisal	1	5	3.922	.892
Job security	1	5	2.691	1.378
Idealized influence (attribute)	1	5	3.204	.942
Participation	1	5	3.163	.835
Idealized influence (behavior)	1	5	3.361	.915
Inspirational motivation	1	5	3.470	.820
Intellectual stimulation	1	5	3.592	.908
Individualized consideration.	1	5	3.607	.828
Effective reporting system	1	5	3.743	.812
Organizational climate	1	5	3.115	.699
Frequency of occurrence of adverse events	1	5	2.598	.652
Overall perception of patient safety	1	5	3.747	.878

5.6 The Rationale behind Choosing PLS SEM for this Study

This study aims to examine the associations among latent variables and thus the latent analysis method was appropriately employed. The alternative was to use covariance-based SEM technique, but for such a technique, data must have normal distribution (Byrne, 2010; Hair *et al*., 2010). The assumptions below were examined in SPSS prior to selecting the analysis methods.

5.6.1 Multicollinearity Test

The multicollinearity test is recommended prior to initiating the proposed model testing (Hair *et al*., 2010). It shows the presence of relapse in the correlation matrix where in the independent variable is high and significantly related with another independent variable. Additionally, the multicollinearity presence can be noted when the correlation value is higher than 0.90 (Hair *et al*., 2010). The multicollinearity test is conducted by the examination of the variance influence factor (VIF) as well as the tolerance value.

Specifically, VIF values represent the level of variability of the chosen independent variable which is reflected by other independent variables while the tolerance value is the inverse of VIF (Hair *et al*., 2010). Both values cut off points are 10 and 0.10 (for VIF and tolerance respectively), indicating that VIF that is closer to 1.—shows negligible or lack of multicollinearity.

The three models highlight collinearity statistics for the entire independent variables in Table 5.6. Additionally, the variables correlation were less than 0.90 indicating no multicollinearity issue and VIF values ranged from 1 to 3.913 and tolerance values ranged from 1 and 0.459. Hence, based on these results, the assumption of multicollinearity was not violated.

Table 5.6
Multicollinearity Test

Model		Collinearity Statistics	
		Tolerance	VIF
Organizational Climate	Perceived Patient Safety	0.399	2.506
High Performance work System		0.256	3.913
Effective Reporting System		0.390	2.561
Organizational Climate	Occurrence Frequency of Adverse Events	0.399	2.506
High Performance work System		0.256	3.913
Effective Reporting System		0.390	2.561
High Performance work System	Organizational Climate	0.459	2.176
Transformational Leadership		0.459	2.176
High Performance work System	Effective Reporting System	0.459	2.176
Transformational Leadership		0.459	2.176
Transformational Leadership	High Performance work System	1.000	1.000

5.6.2 Assumption of Normality

Normality is utilized to present the symmetrical curve having the highest scores frequency towards extremes in the small as well as middle frequencies (Pallant, 2005). Accordingly, Kline (1998) and Pallant (2005) recommended the assessment of the normal distribution of scores for both independent and dependent variables by noting their skewness and kurtosis values. In the field of social sciences, the constructs nature have various scales and measures that may lead to positive or negative skewness (Pallant, 2005). Additionally, kurtosis represents a score that measures the distribution representing the level to which the observations are gathered around the central mean.

Hair *et al*. (2006) contended that the skewness values external the range from +1 to -1 are considered to have considerable skewed distribution. On the other hand, Kline (1998) suggested the cutoff point to be in the range of +3 and -3. On the basis of the above criteria and others like it, the skewness values in this study fell within the acceptable range proposed by Kline (1998) which is in the range of +3 and -3 although they are not acceptable according to Hair *et al*. (2006). As for the value of kurtosis, Coakes and Steed (2003) established the range of +3 and -3, in which case, they are acceptable in this study as presented in Table 5.5.

On the basis of this discussion, the results present that some skewness values deviate from normal distribution, Hence, in order to tackle non-normal and skewed data for the testing of the hypothesized relationships, the researcher made use of PLS Structural Equation Modeling that refers to distribution free statistical modeling method (Chen, 1998).

Table 5.7
Results of Skweness and Kurtusis for Normality Test

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Recruitment/Hiring	-.922	.165	-.530	.329
Training	-1.329	.165	.884	.329
Performance Appraisal	-.704	.165	-.492	.329
Job Security	.244	.165	-1.319	.329
Idealized influence (attribute)	-1.369	.165	.630	.329
Participation	-.990	.165	.526	.329
Idealized influence (behavior)	-.620	.165	.213	.329
Inspirational motivation	-.997	.165	2.001	.329
Intellectual stimulation	-.785	.165	1.038	.329
Individualized consideration.	-1.228	.165	2.433	.329
Effective Reporting system	-1.762	.165	3.724	.329
Organizational Climate	-.273	.165	-.589	.329
Occurrence Frequency of Adverse Events	.464	.165	1.132	.329
Perception of Patient safety	-1.758	.165	3.766	.329

5.6.3 Test of Linearity

A linearity test provides the location of the relationship between independent variables and dependent variables and this predicts the direction of the hypothesis. Hence, positive values reflect positive relationships. On the basis of Hair *et al.*'s (2006) contention, the partial regression plot was utilized for every variable when there is more than a single independent variable in order to ensure the most optimum equation representation. Accordingly, the normal P-P plot of regression standardized residual plot was administered for independent variables on

dependent variables. On the basis of the results, normal distribution was observed. The graph of the output for linearity test is attached in Appendix C.

5.7 New Hypotheses listed

There are three new hypotheses stated related to the final model, these hypotheses are below:

Hypothesis 8: High performance work system (HPWS) significantly affects effective reporting system.

Hypothesis 9: Frequency of occurrence of adverse event negatively affects the overall perception of patient safety.

Hypothesis 10: Transformational leadership significantly affects organizational climate.

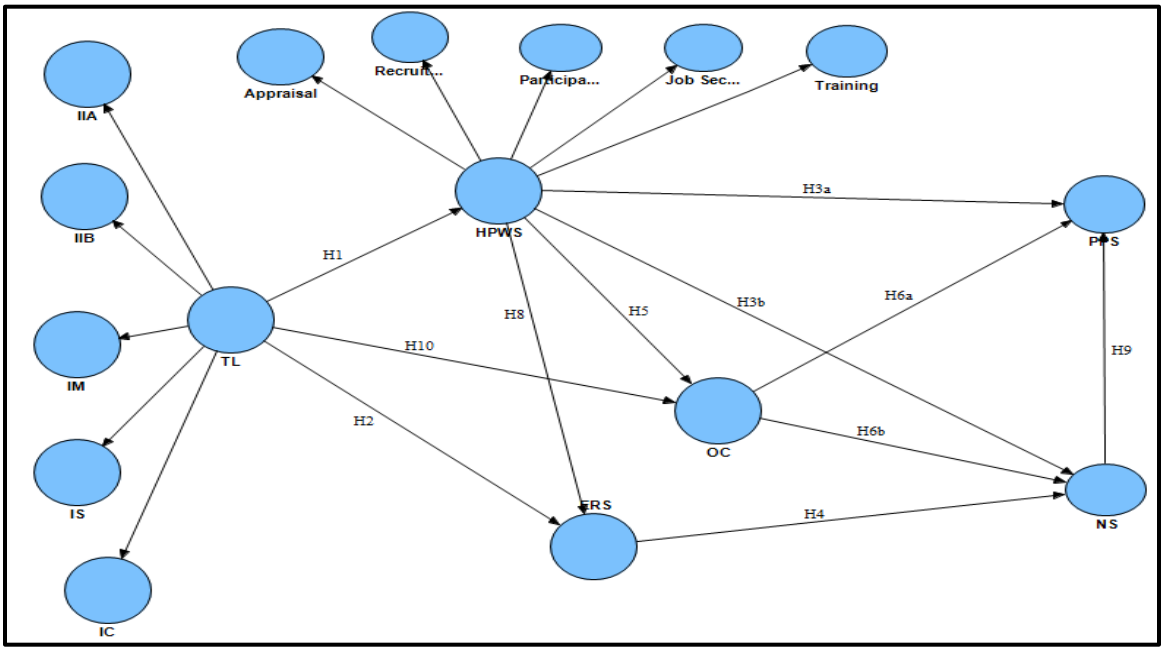


Figure 5.1
Research framework and hypotheses

5.8 Testing the Measurement Model

Before, testing the hypotheses of the study, the measurement model or the outer model was assessed first using partial least squares structural equation modeling (PLS-SEM). Two steps were followed to know the model's goodness of fit. Firstly, construct validity, which include factor loadings, composite reliability, Cronbach's alpha and convergence validity, was ascertained. Secondly, discriminant validity that includes Fornell-Larcker (1981) criterion was determined. Figure 5.2 shows the model with its structural dimensions.

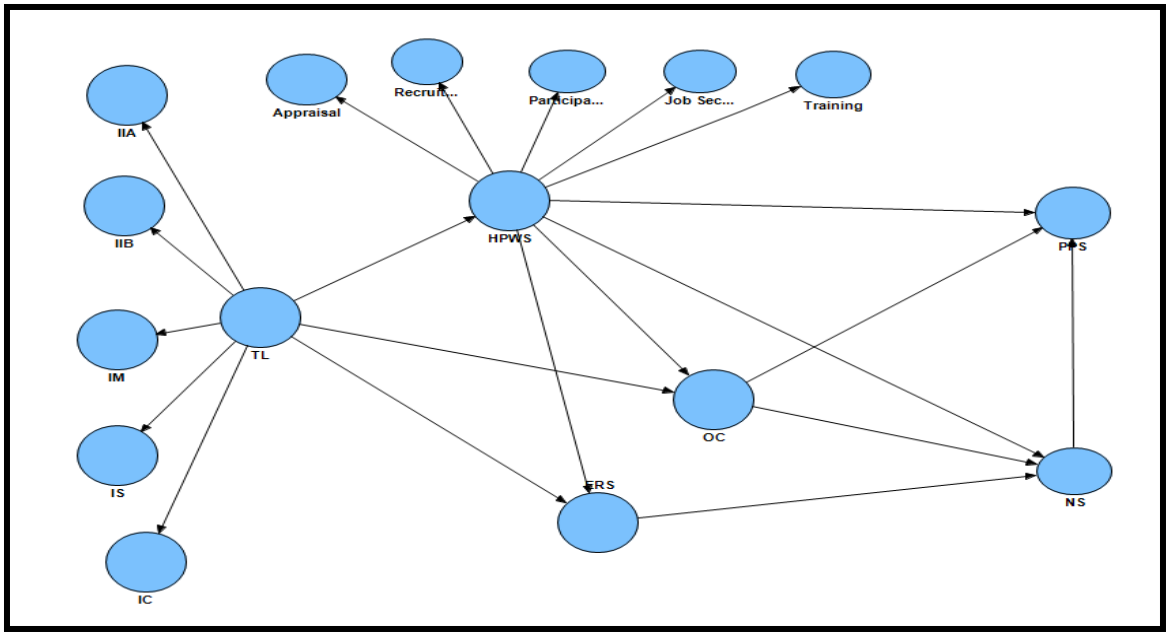


Figure 5.2
The research model

5.8.1 Construct Validity

Construct validity refers to the degree to which the items generated to measure a construct can appropriately measure the concept they were designed to measure (Hair *et al*., 2010). More specifically, all the items designed to measure a construct should load higher on their respective construct than their loadings on other constructs. This was ensured by a comprehensive review of the literature to generate the items that already have been established and tested in previous studies.

Based on factor analysis, items were correctly assigned to their constructs. Construct validity was ascertained in two ways. Firstly, the items showed high loadings on their respective constructs when compared with other constructs. Secondly, the item loadings significantly loaded on their respective constructs(Chow & Chan, 2008). Table 5.8 and Table 5.9 show the result.

Table 5.8
Factor Analysis and Cross Loading

Variable	Items	Appr	ERS	IC	IIA	IIB	IM	IS	Job	NS	OC	PPS	Part	Recr	Tra
Performance appraisal (Appr)	perf1	**0.849**	0.589	0.422	0.533	0.497	0.678	0.418	0.218	0.073	0.525	0.290	0.620	0.293	0.832
	perf2	**0.801**	0.539	0.458	0.145	0.339	0.537	0.478	0.137	0.229	0.274	0.035	0.414	0.385	0.349
	perf3	**0.877**	0.656	0.495	0.356	0.492	0.633	0.500	-0.106	0.051	0.266	0.040	0.375	0.263	0.553
Effective reporting system (ERS)	rep1	0.463	**0.804**	0.730	0.689	0.647	0.640	0.704	0.403	0.149	0.552	0.243	0.539	0.601	0.438
	rep2	0.604	**0.898**	0.726	0.676	0.675	0.732	0.648	0.400	-0.041	0.599	0.294	0.560	0.500	0.610
	rep3	0.451	**0.730**	0.378	0.439	0.273	0.393	0.262	0.292	-0.262	0.486	0.057	0.342	0.650	0.487
	rep4	0.669	**0.854**	0.604	0.540	0.514	0.708	0.620	0.200	-0.088	0.575	0.308	0.477	0.439	0.594
	rep5	0.564	**0.931**	0.608	0.673	0.533	0.651	0.584	0.314	-0.181	0.592	0.258	0.547	0.629	0.654
	rep6	0.745	**0.790**	0.657	0.721	0.702	0.777	0.608	0.146	0.117	0.488	0.361	0.525	0.434	0.779
	rep8	0.623	**0.833**	0.553	0.350	0.452	0.663	0.620	0.439	0.015	0.596	0.341	0.528	0.480	0.483
	rep9	0.556	**0.833**	0.629	0.350	0.406	0.629	0.626	0.407	0.019	0.514	0.136	0.568	0.404	0.460

Table 5.8 (Continued)

Variable	Items	Appr	ERS	IC	IIA	IIB	IM	IS	Job	NS	OC	PPS	Part	Recr	Tra
Individualized consideration (IC)	l17	0.490	0.622	**0.763**	0.565	0.644	0.775	0.716	0.403	0.320	0.472	0.452	0.597	0.590	0.491
	l18	0.360	0.651	**0.893**	0.523	0.657	0.720	0.772	0.235	0.313	0.415	0.084	0.474	0.471	0.203
	l19	0.370	0.537	**0.822**	0.563	0.693	0.677	0.672	0.223	0.309	0.461	0.042	0.509	0.275	0.214
	l20	0.543	0.610	**0.798**	0.644	0.709	0.688	0.796	0.255	0.288	0.474	0.261	0.514	0.263	0.500
Idealized influence (attribute) (IIA)	l1	0.303	0.559	0.587	**0.854**	0.668	0.598	0.525	0.300	0.087	0.696	0.550	0.510	0.575	0.524
	l2	0.261	0.566	0.476	**0.771**	0.559	0.400	0.454	0.229	-0.021	0.403	0.184	0.311	0.589	0.517
	l3	0.580	0.685	0.699	**0.896**	0.864	0.809	0.665	0.405	0.335	0.644	0.557	0.626	0.392	0.753
	l4	0.271	0.474	0.579	**0.853**	0.776	0.566	0.663	0.282	0.437	0.419	0.331	0.424	0.223	0.533
Idealized influence (behavior) (IIB)	l5	0.099	0.402	0.617	0.496	**0.660**	0.574	0.571	0.538	0.370	0.633	0.345	0.562	0.563	0.041
	l6	0.386	0.529	0.786	0.719	**0.894**	0.703	0.805	0.353	0.422	0.511	0.248	0.551	0.272	0.331
	l7	0.598	0.628	0.710	0.827	**0.881**	0.837	0.792	0.326	0.297	0.623	0.546	0.555	0.415	0.719
	l8	0.627	0.573	0.644	0.804	**0.889**	0.759	0.614	0.150	0.301	0.482	0.399	0.382	0.345	0.660

Table 5.8 (Continued)

Variable	Items	Appr	ERS	IC	IIA	IIB	IM	IS	Job	NS	OC	PPS	Part	Recr	Tra
Inspirational motivation (IM)	l9	0.682	0.731	0.746	0.743	0.869	**0.894**	0.787	0.408	0.341	0.657	0.466	0.643	0.351	0.684
	l10	0.654	0.598	0.795	0.563	0.778	**0.863**	0.704	0.333	0.298	0.642	0.295	0.661	0.513	0.422
	l11	0.580	0.760	0.859	0.630	0.755	**0.929**	0.841	0.423	0.214	0.694	0.475	0.732	0.624	0.491
	l12	0.723	0.710	0.706	0.627	0.673	**0.873**	0.741	0.276	0.220	0.549	0.481	0.667	0.400	0.739
Intellectual stimulation (IS)	l13	0.714	0.704	0.708	0.743	0.795	0.859	**0.819**	0.385	0.302	0.675	0.576	0.684	0.412	0.759
	l14	0.437	0.585	0.805	0.488	0.658	0.657	**0.898**	0.302	0.460	0.386	0.103	0.531	0.228	0.278
	l15	0.379	0.644	0.821	0.520	0.733	0.789	**0.855**	0.544	0.298	0.654	0.323	0.692	0.523	0.272
	l16	0.343	0.510	0.810	0.629	0.706	0.674	**0.893**	0.143	0.400	0.308	0.184	0.427	0.231	0.287
Job security (Job)	emp1	0.128	0.375	0.322	0.331	0.394	0.420	0.392	**0.964**	0.300	0.737	0.594	0.604	0.455	0.355
	emp2	0.066	0.366	0.346	0.370	0.361	0.365	0.393	**0.965**	0.150	0.671	0.512	0.594	0.511	0.350
Frequency of adverse events (NS)	saf1	0.103	-0.080	0.187	-0.002	0.049	0.090	0.263	0.158	**0.642**	-0.036	-0.084	0.112	-0.106	0.055
	saf2	0.187	0.147	0.485	0.449	0.560	0.450	0.477	0.264	**0.853**	0.237	0.181	0.483	0.152	0.231
	saf4	-0.043	-0.180	-0.010	-0.029	0.081	-0.018	0.081	0.406	**0.763**	0.053	0.147	0.066	-0.074	0.073
	saf5	-0.085	-0.174	0.332	0.084	0.297	0.200	0.374	0.025	**0.749**	-0.132	-0.003	0.146	-0.132	-0.212
	saf6	0.116	-0.001	0.407	0.335	0.422	0.318	0.439	0.112	**0.873**	-0.015	-0.032	0.376	-0.086	0.105
	safe3	0.267	-0.014	0.312	0.235	0.389	0.269	0.291	-0.131	**0.715**	-0.053	-0.068	0.109	-0.203	0.105

Table 5.8 (Continued)

Variable	Items	Appr	ERS	IC	IIA	IIB	IM	IS	Job	NS	OC	PPS	Part	Recr	Tra
Organizational climate (OC)	clim1	0.379	0.630	0.553	0.719	0.646	0.680	0.602	0.670	0.108	**0.931**	0.702	0.771	0.518	0.607
	clim2	0.402	0.702	0.710	0.363	0.542	0.700	0.661	0.473	0.051	**0.674**	0.276	0.533	0.478	0.230
	clim3	0.189	0.302	0.222	0.117	0.177	0.358	0.240	0.567	-0.152	**0.661**	0.295	0.668	0.394	0.162
	clim4	0.356	0.532	0.360	0.577	0.587	0.551	0.438	0.640	0.036	**0.901**	0.708	0.525	0.502	0.552
	clim6	0.390	0.483	0.398	0.590	0.571	0.548	0.452	0.634	0.232	**0.847**	0.738	0.550	0.624	0.537
	clim7	0.330	0.420	0.380	0.449	0.460	0.511	0.328	0.396	-0.205	**0.585**	0.290	0.409	0.415	0.441
perception of patient safety (PPS)	saft1	0.183	0.155	0.060	0.354	0.221	0.314	0.176	0.242	0.010	0.366	**0.761**	0.300	0.130	0.512
	saft2	0.346	0.415	0.259	0.611	0.542	0.518	0.365	0.513	0.034	0.689	**0.877**	0.390	0.394	0.673
	saft3	0.090	0.115	0.117	0.189	0.176	0.234	0.298	0.177	-0.021	0.378	**0.652**	0.143	0.226	0.231
Participation (Part)	part1	0.583	0.596	0.613	0.418	0.616	0.781	0.682	0.604	0.424	0.607	0.421	**0.845**	0.394	0.513
	part2	0.368	0.498	0.609	0.561	0.533	0.597	0.634	0.552	0.360	0.632	0.172	**0.884**	0.399	0.371
	part3	0.523	0.500	0.444	0.505	0.429	0.585	0.450	0.459	0.065	0.661	0.387	**0.870**	0.354	0.566
Recruitment/hiring (Recr)	recruit1	0.264	0.561	0.451	0.609	0.496	0.501	0.425	0.571	-0.075	0.731	0.595	0.474	**0.926**	0.478
	recruit2	0.387	0.597	0.530	0.350	0.418	0.530	0.408	0.496	0.074	0.505	0.222	0.479	**0.901**	0.311
	recruit3	0.357	0.512	0.340	0.415	0.333	0.410	0.266	0.290	-0.155	0.469	0.393	0.233	**0.896**	0.444
Training (Tra)	train1	0.682	0.636	0.436	0.677	0.537	0.649	0.470	0.402	0.179	0.546	0.508	0.616	0.420	**0.962**
	train2	0.679	0.631	0.328	0.607	0.441	0.562	0.369	0.250	0.068	0.471	0.489	0.433	0.414	**0.952**
	train3	0.703	0.694	0.469	0.716	0.600	0.665	0.505	0.426	0.112	0.638	0.528	0.564	0.466	**0.959**

Table 5.9
Significance Level of Factor Loadings

Construct	Items	Loadings	Std. error	t	P
Performance appraisal	perf1	0.849	0.012	73.802	0.000
	perf2	0.801	0.031	25.706	0.000
	perf3	0.877	0.018	49.524	0.000
Effective reporting system	rep1	0.804	0.033	24.596	0.000
	rep2	0.898	0.019	48.206	0.000
	rep3	0.730	0.054	13.581	0.000
	rep4	0.854	0.024	36.308	0.000
	rep5	0.931	0.016	59.847	0.000
	rep6	0.790	0.026	30.916	0.000
	rep8	0.833	0.021	39.463	0.000
	rep9	0.833	0.035	23.774	0.000
Individualized consideration	l17	0.763	0.025	31.096	0.000
	l18	0.893	0.019	46.490	0.000
	l19	0.822	0.036	23.109	0.000
	l20	0.798	0.032	24.937	0.000
Idealized influence (attribute)	l1	0.854	0.022	38.322	0.000
	l2	0.771	0.055	14.133	0.000
	l3	0.896	0.012	72.815	0.000
	l4	0.853	0.021	40.791	0.000
Idealized influence (behavior)	l5	0.660	0.046	14.233	0.000
	l6	0.894	0.013	70.202	0.000
	l7	0.881	0.013	68.689	0.000
	l8	0.889	0.012	71.561	0.000
Inspirational motivation	l9	0.894	0.016	55.308	0.000
	l10	0.929	0.012	77.187	0.000
	l11	0.873	0.021	42.314	0.000
	l12	0.819	0.022	37.251	0.000
Intellectual stimulation	l13	0.819	0.022	37.251	0.000
	l14	0.898	0.018	50.596	0.000
	l15	0.855	0.023	37.154	0.000
	l16	0.893	0.014	61.861	0.000
Job security	emp1	0.964	0.008	114.273	0.000
	emp2	0.965	0.006	157.864	0.000

Table 5.9 (Continued)

Construct	Items	Loadings	Std. error	t	P
Frequency of adverse events	saf1	0.642	0.064	10.040	0.000
	saf2	0.853	0.049	17.478	0.000
	saf4	0.763	0.071	10.676	0.000
	saf5	0.749	0.065	11.592	0.000
	saf6	0.873	0.060	14.659	0.000
	safe3	0.715	0.069	10.350	0.000
Organizational climate	clim1	0.931	0.008	111.244	0.000
	clim2	0.674	0.051	13.174	0.000
	clim3	0.661	0.045	14.733	0.000
	clim4	0.901	0.011	83.654	0.000
	clim6	0.847	0.017	49.984	0.000
	clim7	0.585	0.063	9.281	0.000
perception of patient safety	saft1	0.761	0.060	12.676	0.000
	saft2	0.877	0.020	43.658	0.000
	saft3	0.652	0.047	13.725	0.000
Participation	part1	0.845	0.019	44.386	0.000
	part2	0.884	0.018	49.244	0.000
	part3	0.870	0.014	62.418	0.000
Recruitment/hiring	recruit1	0.926	0.012	75.744	0.000
	recruit2	0.901	0.016	55.051	0.000
	recruit3	0.896	0.014	62.380	0.000
Training	train1	0.962	0.006	156.525	0.000
	train2	0.952	0.010	92.065	0.000
	train3	0.959	0.007	146.735	0.000

5.8.2 Convergent Validity of the Measurements

Table 5.10 shows that the composite reliability values ranged from 0.860 to 0.964. These values exceeded the recommended value of 0.7 (Fornell & Larcker, 1981; Hair *et al*., 2010). The average variances extracted (AVE) values ranged between 0.593 and 0.931, indicating a good level of construct validity of the measures used (Barclay *et al*., 1995). These results confirm the convergent validity of the outer model.

Table 5.10
Convergent Validity Analysis

Variable	Items	Factor loading	Cronbach's alpha	CR[a]	AVE[b]
Performance appraisal	perf1	0.849	0.799	0.880	0.710
	perf2	0.801			
	perf3	0.877			
Effective reporting system	rep1	0.804	0.938	0.949	0.699
	rep2	0.898			
	rep3	0.730			
	rep4	0.854			
	rep5	0.931			
	rep6	0.790			
	rep8	0.833			
	rep9	0.833			
Individualized consideration	l17	0.763	0.836	0.891	0.673
	l18	0.893			
	l19	0.822			
	l20	0.798			
Idealized influence (attribute)	l1	0.854	0.867	0.909	0.714
	l2	0.771			
	l3	0.896			
	l4	0.853			
Idealized influence (behavior)	l5	0.660	0.852	0.902	0.700
	l6	0.894			
	l7	0.881			
	l8	0.889			
Inspirational motivation	l9	0.894	0.913	0.939	0.793
	l10	0.863			
	l11	0.929			
	l12	0.873			

Table 5.10 (Continued)

Variable	Items	Factor loading	Cronbach's alpha	CR[a]	AVE[b]
Intellectual stimulation	l13	0.819	0.889	0.923	0.751
	l14	0.898			
	l15	0.855			
	l16	0.893			
Job security	emp1	0.964	0.926	0.964	0.931
	emp2	0.965			
Frequency of adverse events	saf1	0.642	0.863	0.896	0.593
	saf2	0.853			
	saf4	0.763			
	saf5	0.749			
	saf6	0.873			
	safe3	0.715			
Organizational climate	clim1	0.931	0.867	0.899	0.605
	clim2	0.674			
	clim3	0.661			
	clim4	0.901			
	clim6	0.847			
perception of patient safety	saft1	0.761	0.764	0.860	0.675
	saft2	0.877			
	saft3	0.652			
	saft7	0.567			
Participation	part1	0.845	0.835	0.901	0.751
	part2	0.884			
	part3	0.870			
Recruitment/hiring	recruit1	0.926	0.893	0.933	0.824
	recruit2	0.901			
	recruit3	0.896			
Training	train1	0.962	0.955	0.971	0.917
	train2	0.952			
	train3	0.959			

Note:
[a] Composite Reliability (CR) = $(\Sigma \text{ factor loading})^2 / \{(\Sigma \text{ factor loading})^2) + \Sigma \text{ (variance of error)}\}$
[b] Average Variance Extracted (AVE) = $\Sigma \text{ (factor loading)}^2 / (\Sigma \text{ (factor loading)}^2 + \Sigma \text{ (variance of error)}\}$

5.8.3 Discriminant Validity of the Measures

The discriminant validity of the measures was confirmed by employing the method of Fornell and Larcker (1981). As illustrated in Table 5.11, the square root of average variance extracted (AVE) for all the constructs were placed at the diagonal elements of the correlation matrix. As the diagonal elements were higher than the other elements of the row and column in which they were located, this confirms the discriminant validity of the outer model.

In sum, having established the construct validity of the outer model, it is assumed that the obtained results pertaining to the hypotheses testing should be valid and reliable.

Table 5.11
Discriminant Validity Analysis

Constructs	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
1) Performance appraisal	**0.843**													
2) Effective reporting system	0.706	**0.836**												
3) Individualized consideration	0.539	0.740	**0.820**											
4) Idealized influence (attribute)	0.434	0.678	0.701	**0.845**										
5) Idealized influence (behavior)	0.533	0.644	0.825	0.862	**0.837**									
6) Inspirational motivation	0.739	0.788	0.873	0.721	0.865	**0.890**								
7) Intellectual stimulation	0.546	0.708	0.907	0.692	0.838	0.865	**0.867**							
8) Job security	0.101	0.384	0.346	0.364	0.392	0.407	0.407	**0.965**						
9) Frequency of adverse events	0.136	-0.034	0.378	0.268	0.409	0.301	0.421	0.222	**0.771**					
10) Organizational climate	0.441	0.658	0.555	0.651	0.665	0.715	0.589	0.729	0.051	**0.778**				
11) perception of patient safety	0.283	0.321	0.203	0.518	0.433	0.466	0.354	0.417	0.011	0.628	**0.822**			
12) Participation	0.574	0.616	0.639	0.568	0.607	0.759	0.678	0.621	0.319	0.731	0.361	**0.867**		
13) Recruitment/hiring	0.368	0.614	0.487	0.509	0.461	0.531	0.407	0.501	-0.064	0.631	0.335	0.441	**0.908**	
14) Training	0.719	0.684	0.431	0.698	0.552	0.655	0.470	0.366	0.124	0.582	0.617	0.564	0.453	**0.958**

5.9 Goodness of Fit (GoF) of the Model

To support the validity of the PLS model, GoF value was estimated according to the Using the formula, the GoF value was 0.598 obtained.

$$Gof = \sqrt{(\overline{R^2} \times \overline{AVE})}$$

Table 5.12
Goodness of Fit of the Model

Constructs	**R square**	**AVE**
Performance appraisal		0.710
Effective reporting system	0.717	0.699
High performance work system	0.590	
Individualized consideration		0.673
Idealized influence (attribute)		0.714
Idealized influence (behavior)		0.700
Inspirational motivation		0.793
Intellectual stimulation		0.751
Job security		0.931
Frequency of adverse events	0.119	0.594
Organizational climate	0.595	0.605
Perceived patient safety	0.401	0.675
Participation		0.751
Recruitment/hiring		0.824
Training		0.917
	0.484	0.738
Goodness of Fit (GoF)		**0.598**

A comparison was made with the baseline values of GoF (small = 0.1, medium = 0.25, large = 0.36), as suggested by Wetzels *et al*. (2009). Table 5.12 shows that the model's goodness of fit measure was large, indicating an adequate level of global PLS model validity.

5.10 Prediction Relevance of the Model

Result pertaining to the prediction quality of the model is illustrated in Table 5.13, which indicated that the cross-validated redundancy of organizational climate, frequency of adverse events, effective reporting system and perception of patient safety were 0.260, 0.047, 0.343 and 0.217, respectively. These values were more than zero, indicating an adequate predictive validity of the model based on the criteria suggested by Fornell and Cha (1994).

Table 5.13
Predictive Quality of the Model

Variable	**Variable type**	**R square**	**Cross-validated communality**	**Cross-validated redundancy**
Organizational climate	Endogenous	0.595	0.604	0.260
Frequency of adverse events	Endogenous	0.119	0.592	0.047
Effective reporting system	Endogenous	0.717	0.699	0.343
Perceived patient safety	Endogenous	0.401	0.523	0.217

5.11 First-Order and Second-Order Constructs

Before examining the theoretical and conceptual aspects of the second order constructs in the model, the differences between the first and the second order measurement models as discussed below.

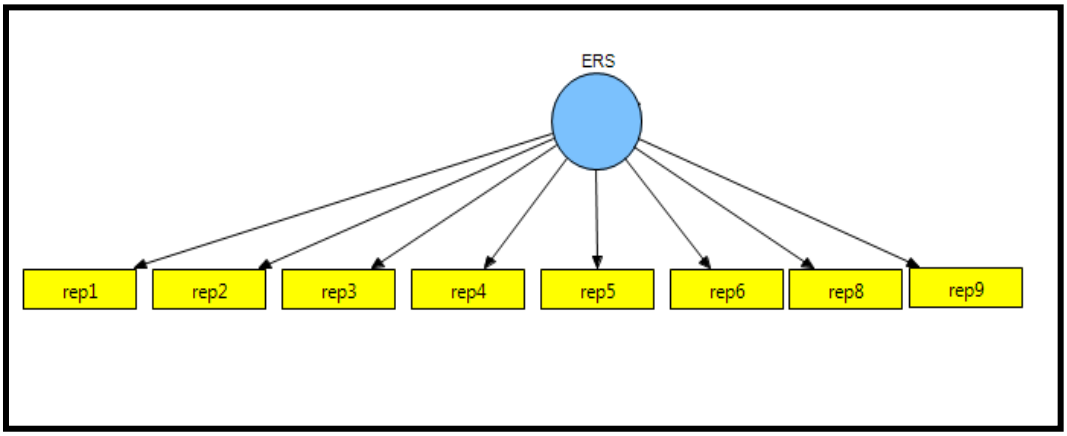


Figure 5.4
First order measurement model of effective reporting system (ERS)

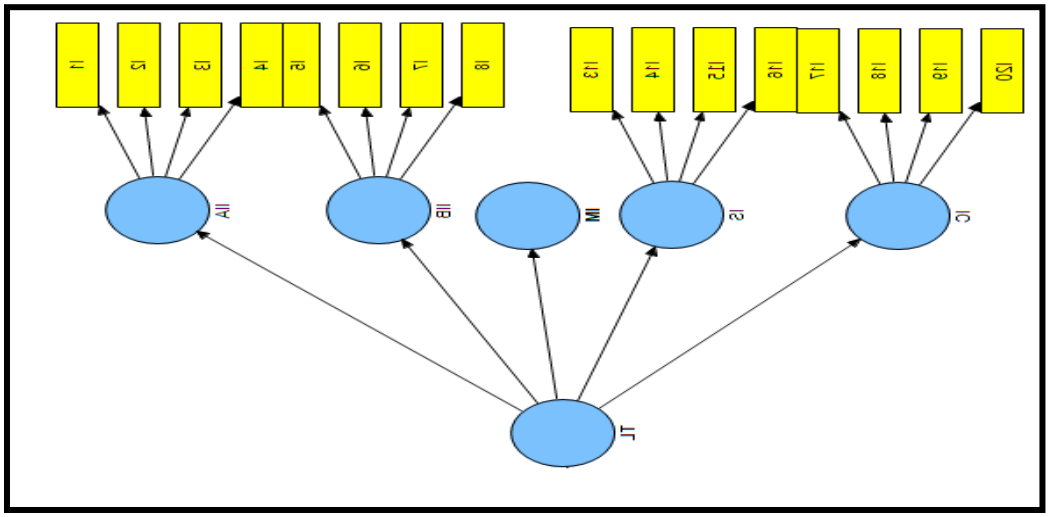


Figure 5.5
Second order measurement model of transformational leadership (TL)

As illustrated in Figure 5.4, effective reporting system (ERS) as a latent construct was measured by a set of measured variables namely REP1 through REP9 and one question was deleted since its loading was less than 0.5. As illustrated in Figure 5.5, transformational leadership (TL) construct was measured indirectly by 20 items through other layer of latent constructs. Therefore, TL is called a second-order measurement model. This study has two layers of latent variables, namely, second-order factor structure such as transformational leadership (TL) and high performance work system (HPWS) as they caused multiple first order latent factors (Hair *et al*., 2010).

5.11.1 Establishing the Second Order Constructs

Before proceeding to test the research model, specific procedures were taken to examine whether the first order constructs were qualified to be conceptually explained by the respective second-order construct. To do, the first-order constructs have to be explained well by the hypothesized second-order construct and they have to be distinct (Byrne, 2010).

With regards to transformational leadership (TL) construct, the five first-order constructs namely individualized consideration (IC), idealized influence (attribute) (IIA), idealized influence (behavior) (IIB), inspirational motivation (IM) and intellectual stimulation (IS) were explained well by the TL construct since the R square ranged from 0.733 to 0.902, as illustrated in Table 5.14. In addition to that, these constructs were confirmed to be distinct using the Fornell and Larcker's (1981) criteria.

Table 5.14
Second-Order Constructs Analysis

Variables	**Dimensions**	**Loading**	**Std. error**	**T**	**p**	**R^2**
High performance work system	Performance appraisal	0.819	0.024	33.841	0.000	0.671
	Job security	0.507	0.043	11.709	0.000	0.257
	Participation	0.806	0.026	30.698	0.000	0.650
	Recruitment/hiring	0.695	0.046	15.190	0.000	0.483
	Training	0.876	0.012	73.189	0.000	0.767
Transformational leadership	Individualized consideration	0.932	0.014	65.907	0.000	0.869
	Idealized influence (attribute)	0.856	0.014	60.765	0.000	0.733
	Idealized influence (behavior)	0.950	0.007	144.891	0.000	0.902
	Inspirational motivation	0.943	0.010	93.251	0.000	0.890
	Intellectual stimulation	0.933	0.010	97.641	0.000	0.870

Similarly, the high performance work system (HPWS) construct was hypothesized to be measured by the five first-order constructs, namely, performance appraisal, job security, participation, recruitment/hiring and training. These constructs were explained well the high performance work system (HPWS) construct, as showed by R square which ranged from 0.257 to 0.767.

5.12 Assessing the Inner Model and Hypotheses Testing Procedures

After the goodness of the outer model had been ascertained, the next step was to test the hypothesized relationships among the constructs. Using the SmartPLS2.0, the hypothesized model was tested by running the PLS algorithm. The path coefficients were then generated, as illustrated in Figure 5.6 and Figure 5.7

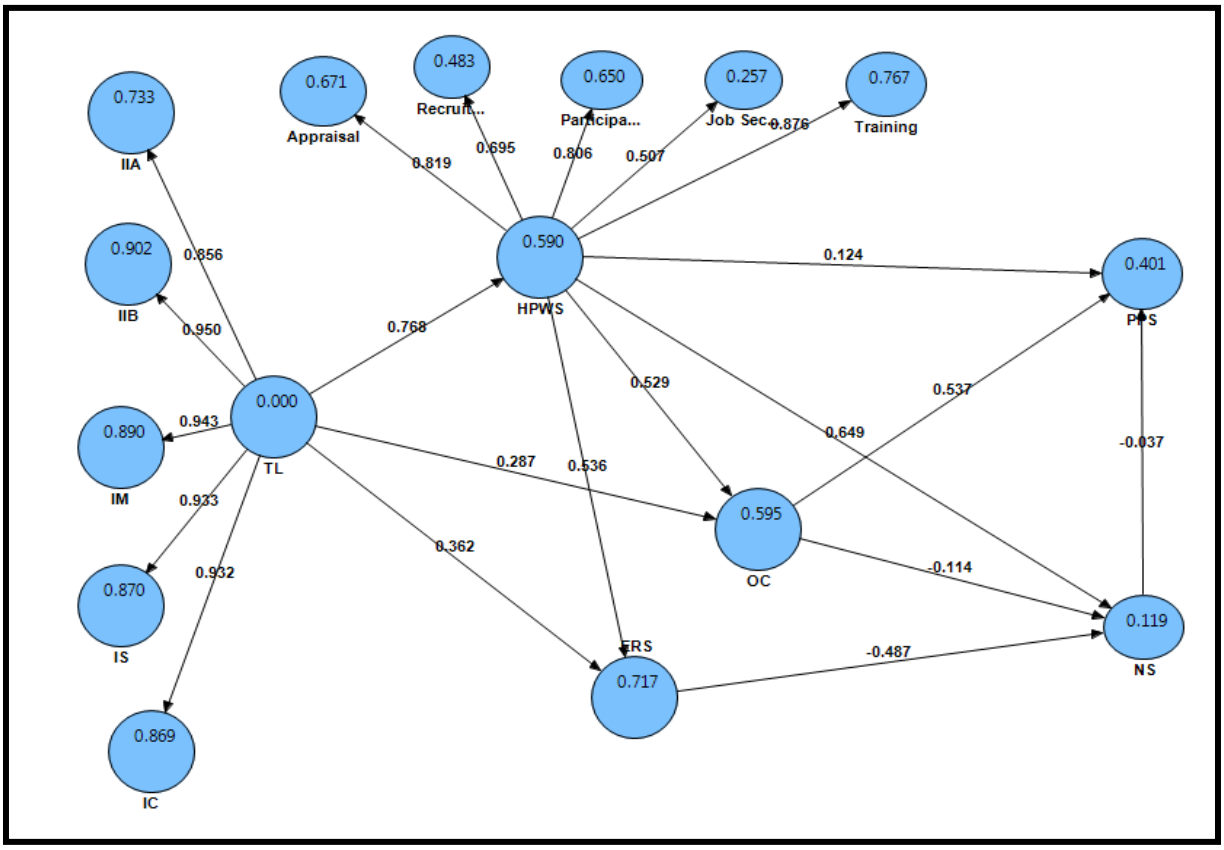


Figure 5.6
Path model results

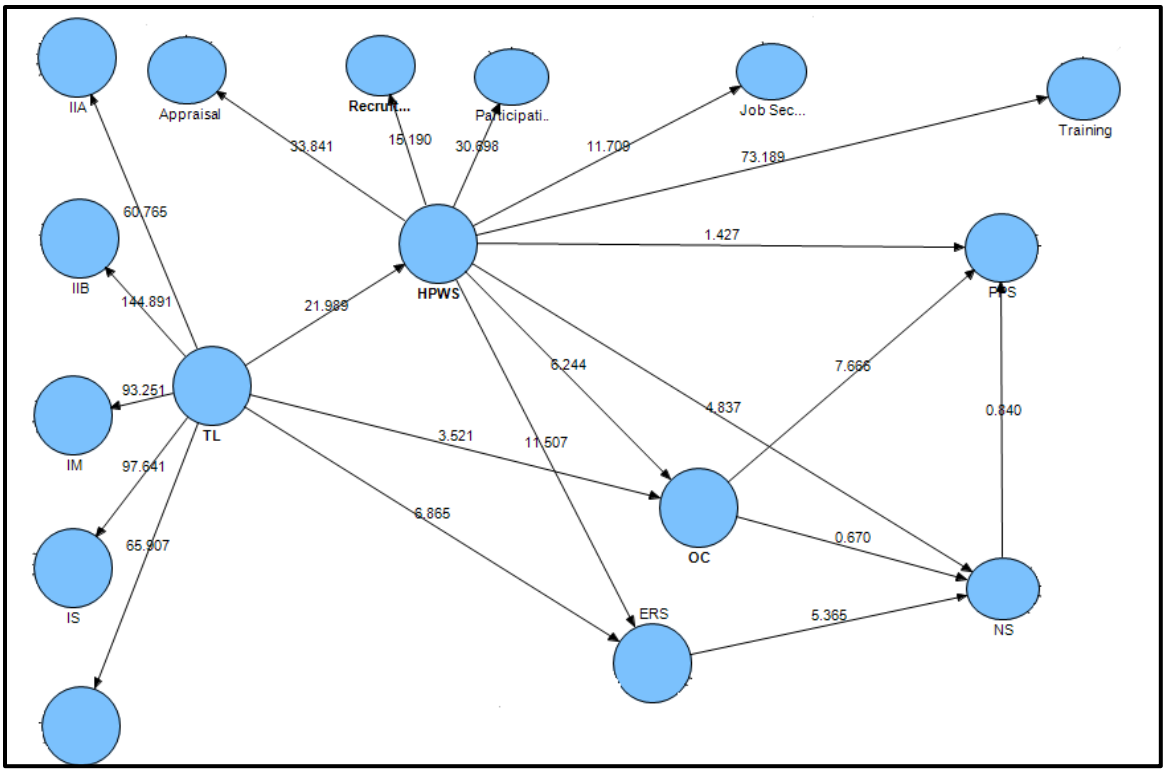


Figure 5.7
Path Model Significance Results

To be able to conclude whether the path coefficients were statistically significant or not, this study employed the bootstrapping techniques embedded with the SmartPLS2.0. To run the bootstrapping of this model, the researcher used 500 samples with number of cases equal to the observations out of 217 cases. More specifically, the T values accompanying each path coefficient was generated using the bootstrapping technique and subsequently the p values were generated, as reported in Table 5.15.

Result showed that transformational leadership had a positive and significant impact on high performance work system ($\beta = 0.768$, $t = 21.989$, $p < 0.01$). This result supported the hypotheses no $H_{1.}$ Moreover, a positive and significant impact of transformational leadership on the effective reporting system ($\beta = 0.362$, $t = 6.865$, $p < 0.01$) was observed, this result supported the hypotheses no $H_{2.}$ The result also indicated that the

influence of high performance work system on overall perception of patient safety was positive and significant (β = 0.124, t = 1.427, p <0.1), indicating the higher the high performance work system leads to the high level of overall perception of patient safety, this result supported the hypotheses no H_{3a}.

Furthermore, the relationship between effective reporting system and frequency of adverse events was negative and significant (β = -0.487, t = 5.365, p < 0.01), while the effect of high performance work system on organizational climate had a positive and significant influence (β = 0.529, t = 6.244, p < 0.01). Similarly, organizational climate had a positive and significant impact on perception of patient safety (β = 0.537, t = 7.666, p < 0.01). But there was an insignificant effect of organizational climate on occurrence frequency of adverse events (β = -0.114, t = 0.670, p > 0.1). In addition, the relationship between high performance work system and effective reporting system was positive and significant (β = 0.536, t = 11.507, p < 0.01).

Result also showed that the relationship between high performance work system and frequency of adverse events was positive and significant (β = 0.649, t = 4.837, p < 0.01), indicating that H_{3b} was not supported the hypothesis. Frequency of adverse events had an insignificant effect on overall perception of patient safety (β = -0.037, t = 0.840, p > 0.1). This result not supported the hypotheses no H_9. In addition, organizational climate had a positive and significant impact on overall perception of patient safety (β = 0.537, t = 7.666, p < 0.01. Finally, the findings showed that transformational Leadership had a positive significant impact on organizational climate at the 0.01 level of significance (β= 0.287, t=3.521, p<0.01), this result supported the hypotheses no $H_{10.}$

Table 5.15
Results of the Inner Structural Model

No	Hypotheses	Path coefficient (β)	Std. error	T	p	Decision
H_1	Transformational leadership →high performance work system	0.768***	0.035	21.989	0.000	Supported
H_2	Transformational leadership →effective reporting system	0.362***	0.053	6.865	0.000	Supported
H_{3a}	High performance work system →overall perception of patient safety	0.124*	0.087	1.427	0.077	Supported
H_4	Effective reporting system →occurrence frequency of adverse events	-0.487***	0.091	5.365	0.000	Supported
H_5	High performance work system →organizational climate	0.529***	0.085	6.244	0.000	Supported
H_{6a}	Organizational climate →overall perception of patient safety	0.537***	0.070	7.666	0.000	Supported
H_{6b}	Organizational climate →occurrence frequency of adverse events	-0.114	0.171	0.670	0.252	Not supported
H_8	High performance work system →effective reporting system	0.536***	0.047	11.507	0.000	Supported

Table 5.15 (Continued)

No	Hypotheses	Path coefficient	Std. error	T	p	Decision
H_{3b}	High performance work system→occurrence frequency of adverse events	0.649	0.134	4.837	0.000	Not Supported
H9	Occurrence frequency of adverse events →overall perception of patient safety	-0.037	0.044	0.840	0.201	Not supported
H_{10}	Transformational leadership →organizational climate	0.287***	0.082	3.521	0.000	Supported

Note: *p < 0.1; **p < 0.05; *** p < 0.01

5.12.1 Mediation Effect Analysis

A mediating variable is the variable that mediates the effect from an independent variable to its dependent variable. If the direct effect from variable X, such as, high performance work system (HPWS) to variable Y, such as, overall perception of patient safety (PPS), does not exist, but instead the effect exists indirectly through another variable M, such as, organizational climate (OC), then in this case M is a mediating variable (Hair *et al*., 2010). The position of the mediation variable in the model illustrated below:

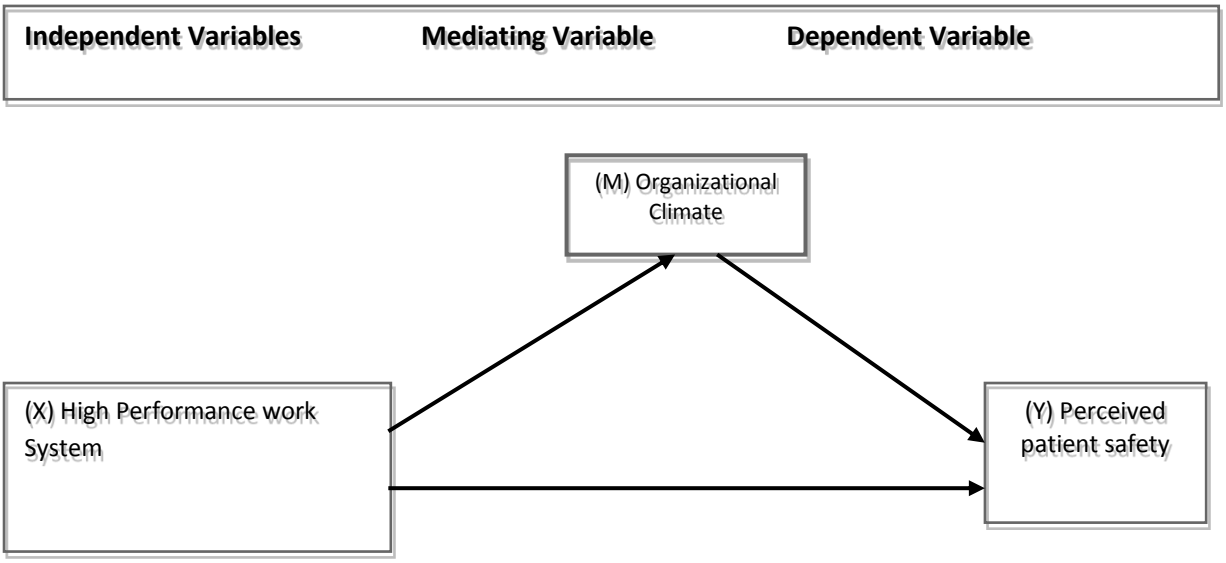


Figure 5.8
Mediation Effect of Organization Climate

In this study, organizational climate was hypothesized as a mediating variable that mediates the relationship between high performance work system and overall perception of patient safety, as shown in Figure 5.9 and Figure 5.10. According to Baron and Kenny (1986), a mediator variable is a generative mechanism wherein the focal independent variable influences the dependent variable of interest. Mediation conveniently takes place where there is a significant relation between predictor and criterion variables. A mediator variable is considered as so if it develops an indirect effect through which the focal independent variable influences the criterion variable under study (Baron & Kenny, 1986). Moreover, Kenny and Little (2011) stated that the mediator variable is capable of transmitting some causal effects of previous variables on to the next ones. Furthermore, mediating variables have been playing a key role in both psychological theory and research. This type of variable enables the transmission of the antecedent variable's effect

to the dependent variable and hence providing a clarification of the variables' relationships.

Several methods have been used for the assessment of mediation in various researches in the past twenty years. A mediation analysis provides the identification of basic processes that underlie human behavior and that are significant throughout behaviors and contexts (MacKinnon & Fairchild, 2010). To test the mediation of M, four conditions must be met: (a) X (predictor) is significantly associated with Y; (b) X (predictor) is significantly associated with M; (c) M is significantly associated with Y (after controlling for X); and (d) the impact of X on Y is significantly less after controlling for M.

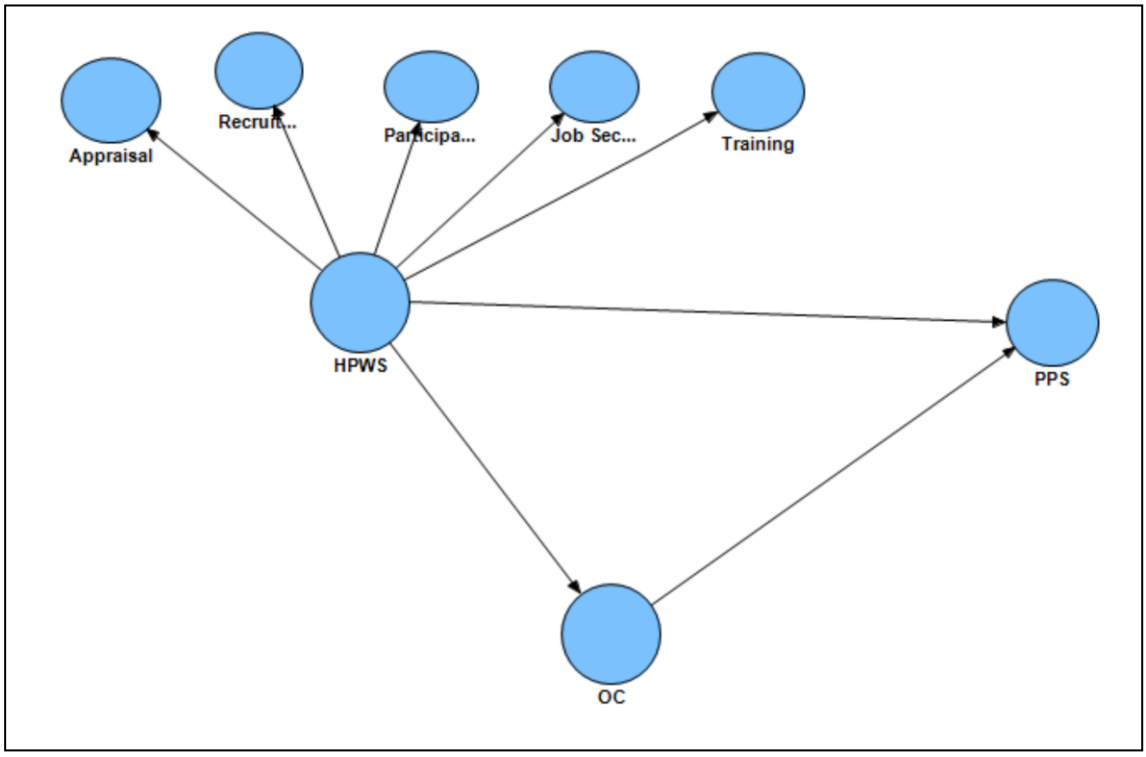


Figure 5.9
Mediation effect of organization climate (H_{12})

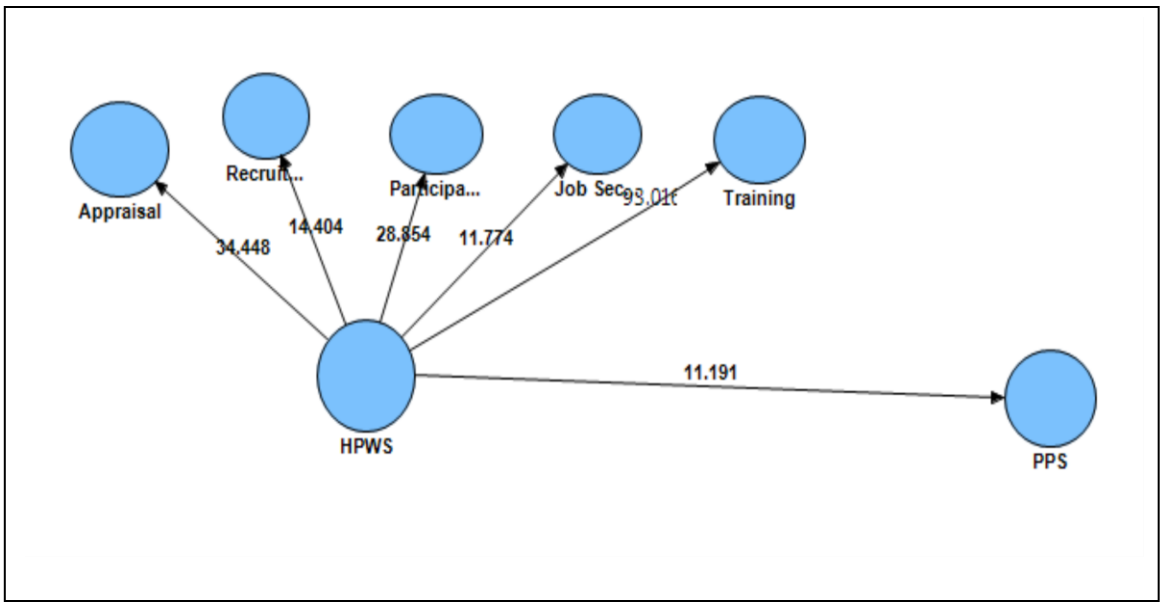


Figure 5.10
Mediation effect of organization climate (direct relationship [C])

5.12.1.1 Testing the Mediation Effect of the Organization Climate

Table 5.16 showed a full mediation effect of organization climate on the relationship between high performance work System and overall perception of patient safety (β = 0.282, t = 4.833, $p < 0.01$), according to Baron and Kenny's (1986) method. regarding to their recommendation, if the indirect effect was found to be significant and C' became insignificant, the mediator is called full or complete mediator as showed in H_7, and if C' was still significant but with less effect, it is called a partial mediator. The result means that organization climate works as a mechanism that can explain the relationship between high performance work system and overall perception of patient safety.

But with regards to variance accounted for (VAF), organizational climate was found to be a partial mediator. According to Hair *et al*., (2014), if VAF > 80%, full mediation is

achieved. But partial mediation is obtained when 20%>= VAF <=80%. No mediation is obtained when VAF < 20%. Since the variance accounted for (VAF) in this study was 69.5%, the partial mediator effect of organization climate was observed. This means that 69.5% of the total effect of the relationship between high performance work systems on overall perception of patient safety was explained by indirect effect of organization climate. Furthermore, the bootstrapping method indicated a mediation effect of organization climate on the relationship between high performance work systems and overall perception of patient safety since the indirect relationship a*b was significant.

Table 5.16
Testing the Mediation Effect of Organization Climate

Hypothesis	A		b		a*b		C		C'		Method		
	Path coeff.	**T**	**Path coeff.**	**T**	**Path coeff.**	**T**	**Path coeff.**	**T**	**Path coeff.**	**T**	**Variance accounted for (VAF)**	**Boot-strapping**	**Baron and Kenny**
H_7: Organizational climate mediates the relationship between high performance work system (HPWS) and perceptions of patient safety	0.529***	6.244	0.537***	5.365	0.282***	4.833	0.533***	11.539	0.124	1.427	0.695[a]	Mediation effect	Full Mediation

5.13 Summary of the Findings

This research employed partial least squares structural equation modeling (PLS-SEM) as the major analysis technique, since PLS SEM is a relatively new analytical technique in construction. Prior to testing the model of the study, rigorous procedures to establish the validity and reliability of the outer model were followed. Once the measurement model was shown to be valid and reliable, the next step was to test the hypothesized relationships. Before examining the hypothesized relationships, the predictive power of the model was investigated and reported and the goodness of the overall model was confirmed. After that, the structural model was examined and the results were reported in detail. As shown in Table 5.16, the hypotheses from $H_{1,}$ H_2, H_{3a}, H_4, $H_{5,}$ $H_{6a,}$ $H_{10\ ,}$ H_7, H_8, and were statistically supported by the findings of the study, and hypotheses of, $H_{6b,}$ H_{3b} and H_9 were not supported. H_7 showed that organizational climate had a full mediation effect according to Baron and Kenny (1986).

Table 5.17
Summary of the Findings

No.	Hypotheses	Decision
H_1	Transformational leadership is significantly related to and antecedes high performance work system (HPWS).	Supported
H_2	Transformational leadership is significantly related to and antecedes effective reporting system of adverse events.	Supported
H_{3a}	High performance work system (HPWS) has a significant effect on perceptions of patient safety.	Supported
H_4	Effective reporting system of adverse events is negatively and significantly affects the frequency of occurrence of adverse events (patient safety).	Supported

Table 5.17 (Continued)

No.	Hypotheses	Decision
H_5	High performance work system (HPWS) is significantly related to organizational climate.	Supported
H_{6a}	Organizational climate significantly affects perceptions of patient safety.	Supported
H_{6b}	Organizational climate negatively and significantly affects frequency of occurrence of adverse events (patient safety).	Not supported
H_8	High performance work system (HPWS) significantly affects effective reporting system.	Supported
H_{3b}	High performance work system negatively and significantly affects frequency of occurrence of adverse events (patient safety).	Not Supported
H_9	Frequency of occurrence of adverse events negatively and significantly affects perceptions of patient safety.	Not supported
H_{10}	Transformational leadership significantly affects organizational climate.	Supported
H_7	Organizational climate mediates the relationship between high performance work system (HPWS) and perceptions of patient safety	Supported*

Note.
* Organization climate was found to be a full mediator according to Baron and Kenny (1986) method but a partial mediator according to the variance accounted for (VAF) method. The bootstrapping method indicated a mediating effect.

In the next chapter, discussion of the findings is offered in relation to the underpinning theories and previous studies.

CHAPTER SIX

DISCUSSION, RECOMMENDATIONS AND CONCLUSIONS

6.1 Introduction

This chapter discusses the findings presented in previous chapter by relating them to theory and past literature. Before that, this chapter starts by recapitulating the key objectives of the study. Next, discussion of each hypothesis developed earlier is offered. This is followed by delineating the implications of the findings to theory and practice. Suggestions for future research are presented next. This chapter ends with some concluding remarks.

6.2 Summary of the Study

The main aim of the current study is to examine the role of transformational leadership High Performance Work System (HPWS), effective reporting system, and organizational climate in determining patient safety. In particular, the present study hypothesized that transformational leadership acts as an antecedent of HPWS, while organizational climate mediates the relationship between HPWS and patient safety.

The main motivation for this study stems from the paucity of research works on the factors influencing patient safety in the Saudi public hospitals due to the escalating incidence of adverse events worldwide and in Saudi Arabia, despite the fact that most of these adverse events are preventable (World Health Organization, 2009). Moreover, there is a considerable shift in the administrative approach in the public hospitals in Saudi

Arabia from the traditional HR system to HPWS, which calls for a study to be conducted to look into the effectiveness of the new system and approach.

The growing concern about patient safety is translated into several researches in developed countries where health institutions have different health care systems from developing countries (Al Rifai, 2008). According to the reports of the World Health Organization (WHO, 2004), health care systems in developing countries usually suffer from deficiencies regarding infrastructure and lack of skilled personnel and other quality issues. The situation is further exacerbated by the lack of effective reporting systems in addition to under reporting of medical errors and adverse events due to reasons related to the organizational characteristics (Parshuram *et al*., 2008). All these issues have important consequence on patient safety.

The official reports from authorities in Saudi Arabia indicated that adverse events in public hospitals represent a real problem which lay its shadow on the community (Arab News, 2012) as well as putting extra burden on the health facilities (Gulf / Saudi Arabia, 2012). The few researches conducted in Saudi Arabia showed that the medical errors were mainly attributed to faults of nursing practices (Al Harby, 2012). But scholars have also pointed out that patient safety is a shared responsibility of those with executive powers such as nurses' managers and top management (Roussel, 2006)

It has been said that HPWS which is gradually replacing the traditional HR system. The relationship between HPWS and outcome has been extensively studied in manufacturing (Barraud-Didier & Guerrero, 2002; Delaney & Huselid, 1996; Guthrie, 2001, Youndt *et*

al., 1996), but fewer studies in the service provider context and in health care in particular (Combs *et al*., 2006). Even the studies conducted in the health care yielded inconsistent results which call for further researches in this field (Legatt, 2011). Furthermore, scholars have also called for research work to identify organizational factors in contributing toward adverse medical errors (Lawton *et al*., 2012). Based on the literature to achieve parsimony in the research framework, we decided to look into the role of HPWS, transformational leadership, and effective reporting system as the organizational factors. These factors were chosen as they have been shown to affect organizational performance. In the context of health care, these factors were hypothesized to reduce adverse occurrences of medical errors and enhance patient safety.

Literature also indicates calls from scholars who highlighted the necessity to examine the mediating factor between HPWS and organizational performance (Combs, Liu, Hal, & Ketchen, 2006; Kohn, Corrigan, & Donaldson, 2000; Hofmann & Mark, 2006). Toward this end, organizational climate was added to the research model as a mediator between HPWS and patient safety. Clarke (2006) stressed that the relationship between reporting system and patient safety must be studied in relation to leadership. Hence, reporting system was included in our research model. In sum, our research model illustrates that patient safety is interrelated with a complicated web of factors of transformational leadership, HPWS, effective reporting system and organization climate, with the aim to achieve the following objectives:

1. To investigate whether high performance work system (HPWS) influences patient safety in Saudi public hospitals.

2. To investigate the mediating effect of organizational climate on the relationship between high performance work system (HPWS) and patient safety in Saudi public hospitals.
3. To examine the relationship between the effective reporting system and patient safety in Saudi public hospitals.
4. To examine the antecedent effect of transformational leadership on both the high performance work system (HPWS) and effective reporting system in Saudi public hospitals.

In developing the research model and hence the hypotheses, the present study is by three key theories. They are transformational leadership theory, Donabedian, HRO theory that postulates the fundamental components to achieve quality in particular in patient safety as one of the indicators of health care quality.

Data were collected via self-administrated questionnaire in which different instruments to measure different variables were assembled. The questionnaire was administered to nurse managers in public hospitals in Saudi Arabia.

A valid response rate of 77% was achieved. Analysis of data was conducted using PLS. The following discusses the findings.

6.3 Discussion

6.3.1 Transformational Leadership and High Performance Work System

Result presented in previous chapter found support for the first hypothesis at the 0.01 level of significance (β= 0.768, t=21.989, $p<0.01$). The result means that transformational leadership was observed to be a significant determinant of high performance work system in Saudi hospitals. The finding is in line with previous studies. Evidence from previous work indicated that transformational leadership remains a significant predictor of follower motivation, satisfaction, and perceptions of leader effectiveness even when statistically controlled for possible confounding behaviors of leadership (Judge & Piccolo, 2004). This notion is supported by the findings of observational and experimental research conducted across various situations and settings, which showed that transformational leadership predicted follower performance and attitude (Bass & Avolio, 2004; Judge & Picollo, 2004).

The positive relationship between transformational leadership and HPWS could be viewed and understood from various aspects. Firstly, transformational leadership denotes comprehensive and integrated leadership capacities to produce transformation, which could lead marked change in organization systems (Hacker & Roberts, 2003). In the context of heath care, the transformation involves a shift in management approach from traditional HR to HPWS (Behrens, 2008). Secondly, HPWS emphasizes a system of management practices that provide employees with skills, information, motivation, and latitude (Guthrie, Spell, & Nyamori, 2002) and empower employees to act effectively

(Becker, Huselid, Becker, & Huselid, 1998; Delery & Shaw, 2001). For such practices to be realized, a transformational leaders is needed, as such leader is able to influence their followers to act beyond their expectations and beyond the exchange agreement (Dvir, Eden, Avolio, & Shamir, 2002, p.735). Also, as a transformational leader is as the one who "owns consciousness within himself and able to raise consciousness in others" (Hacker & Roberts, 2003), he/she is capable of instilling pride and faith in the followers, motivating them, inspiring them to have an optimistic attitude, and stimulating them to be creative and innovative as well as develop problem-solving techniques (Bass & Avolio, 1995), consistent with transformational leadership theory (Bass, 1985; Burns, 1978). In transformational leadership theory, a transformational leader is one who is capable of intellectually stimulating the followers to identify problems and seek for solutions. In the context of health care, this means that such a leader gives autonomy to nurses to challenge conventional methods and to question the status quo toward ensuring patient safety (Bass & Avolio, 1993).

6.3.2 Transformational Leadership and Effective Reporting System

In addition to the positive role transformational leadership has on HPWS, The finding of this study is supporting the relationship between Transformational Leadership and Effective Reporting System at the 0.01 level of significance ($\beta = 0.362$, $t=6.865$, $p<0.01$). This result is in accordance with that found by Tuttle, Holloway, Baird, Sheehan, and Skelton (2004). When health care workers trust that their leader not punish them for reporting adverse occurrences, they will be more encouraged to do so. Weber and Joshi (2000) also asserted that leadership is one of critical success factors of effective reporting

system. The same conclusion was reached by Vogus and Sutcliffe (2007), who observed that trust in leadership perceived by registered nurses was essential in amplifying reporting of medical errors and use of care pathways. Similar result was also reported by Stewart and Usher (2010) in their empirical study in Fiji, where it was found that oppressive leadership practices caused less reporting of medical errors due to fear from reprisals thereby resulting in reduction of patient safety.

Transformational theory postulates that the relationship between a transformational leaders and followers depends on trust (Bass, 1985). Trust is considered the key element for employee to report errors and hazardous incidents without fear of punishment. In this respect, Bass and Avolio (1995) urged the crucial need to develop trust. Because the intellectual dimension of transformational leadership empowers health care workers to detect adverse events and report them, the employees are more likely to develop trust with the leader.

6.3.3 High Performance Work System and overall Perception of Patient Safety

Result showed a positive and direct effect of high performance work system on the overall perception of patient safety. The finding indicated that the impact of High Performance Work System on the Overall Perception of Patient Safety was supported at the 0.01 level of significance (β= 0.124, t=1.427, $p<0.1$). This result is in line with a study conducted by West, Guthrie, Dawson, Borrill, and Carter (2006) in 52 hospitals in England. They found that the adoption of a complementary set of high performance human resource management policies and practices was significantly related to patient

mortality. In examining the effect of HPWS on improved patient outcomes in Australian hospitals, Bonias, Bartram, Leggat, and Stanton (2010) found positive and significant result. They also observed that HPWS was not directly related to perception of employees, but was mediated by components of psychological empowerment of autonomy and competence. Although extensive work has been done on the relationship between HPWS and performance outcome in manufacturing organizations, the result of this study seems to validate further such finding.

The direct effect of HPWS on patient safety confirms Donabedian theory which is concerned about the quality of outcome and its relationship with the structure and processes (Donabedian, 1980). Several scholars indicated that human resource policies and practices are likely to impact patient care quality by influencing both technical and interpersonal aspects (Flood, 1994; Laschinger, Shamian, & Thomson, 2001). In this respect, the finding implies the importance of interpersonal features within the health institution including the relationship between health care professionals and their patients in addition to their relationship with others within the organization

6.3.4 Effective Reporting System and Frequency of Occurrence of Adverse Events (Patient Safety)

Result revealed that the relationship between effective reporting system and frequency of occurrence of adverse events (patient safety) was negatively significant at the 0.01 level of significance (β= -0.487, t=5.365, $p<0.01$), as expected. This means that when an organization has an effective reporting system the frequency of occurrence of adverse

events of patients will reduce. This result is in line with previous studies. For example, Rateau *et al*. (2011) evaluated the impact of using check list for recording consequences of surgical procedures in a university hospital and found that involvement of this recording and reporting system was effective in improving patient safety in the operation room. Catchpole *et al*. (2007) also reported similar result in cardiac and orthopedic surgery departments in England. They found that the most effective and sustainable way to improve safety was to capture problems and report it. In Saudi Arabia, Mwachofi, Walston, and Al-Omar (2011) found that error reporting with feedback suggestions affected significantly patient safety improvements. Encinosa and Bae (2011) revealed that effective reporting system did not reduce the adverse events directly but mitigated repetition and reduced mortalities and readmission as a result of learning from previous errors.

The result also appears to support Donabedian theory in that effective reporting system essentially provides an appropriate "structure" for the "process" of reporting that will eventually affect patient safety as an "outcome" (Donabedian, 1980). Tuttle, Holloway, Baird, Sheehan, and Skelton (2004) provided support for Donabedian theory when they found that a reporting system within a non-punitive environment was associated with empowerment of reporting. This is because such system allowed employees to learn from mistakes and prevent repetition of adverse events, which led to their reduction.

6.3.5 High Performance Work System and Organizational Climate

This study also found that high performance work system had a significantly positive

impact on organizational climate which supported the hypotheses at the 0.01 level of significance (β= 0.529, t=6.244, p<0.01). A similar result was reported by Li, Frenkel and Sanders (2011). Takeuchi, Chen, and Lepak (2009) also observed a similar finding among 324 managers and 522 employees in Japanese establishment.

The positive association between HPWS and organizational climate could be explained by transformational leadership theory which, through its several dimensions, covering most of the favorable characteristics of organizational climate. In its essence, the transformational leadership includes Idealized Influence which includes instillation of pride, faith and motivations among followers; Idealized Influence which includes sharing of values and beliefs in addition to encouraging autonomy; Inspirational Motivation which encompasses creation of optimistic attitude and supporting challenges with confidence; moreover, triggering the innovative and problem solving capabilities through Intellectual Stimulation and lastly giving respect to individualized preferences through the Individual Consideration (Bass & Avolio, 1993). All these characteristics are expected to establish positive organizational climate.

6.3.6 Organizational Climate and Overall Perception of Patient Safety

Result revealed that organizational climate had a positive significant influence on patient safety at the 0.01 level of significance (β= 0.537, t=7.666, p<0.01), that means the suitable organization climate leads to high level of Perceived Patient Safety. Clarke and Donaldson (2008) argued that a non-punitive organizational climate is expected to encourage reporting system. In a different study in Turkey, Bodur and Filiz (2010) found

that the non-punitive climate was associated with perception of physicians and nurses about patient safety. Similar finding was also reported by Malloy *et al*. (2009) in their study that covered four countries (Canada, Ireland, Australia, and Korea). They found that nurses deprived of supportive climate usually had lower insight about safety climate.

The high reliability organization theory include dimensions which are essentially could describe the perception of the health professionals about the safety climate within their hospital; for example "redundancy" which refer to ability of employees to detect errors before it occur (vigilance), which are usually deployed under feeling of "trust" and supported by training to provide higher degree of safety (Weick *et al*., 2005; Sutcliffe, 2006).

6.3.7 Organizational Climate and Frequency of Occurrence of Adverse Events (Patient Safety)

The finding of this study showed that there is a negative impact of Organizational Climate on Occurrence frequency of adverse events at the 0.01 level of significance (β= (-) 0.114, t=0.670, p>0.1), which concluded that the result was not supported the hypotheses. This means that the better the organizational climate, the lower the frequency of occurrence of adverse events. This result is in line with previous studies. For instance, Seibert (2009) demonstrated that positive safety climate reduced the frequency of occurrence of anesthesia errors as it increased interaction with supervisors and peers.

In a quasi-experimental study to examine the effect of changing safety culture through educational intervention to encourage hand washing as an attempt to reduce nosocomial

infection, Larson, Early, Cloonan, Sugrue, and Parides (2000) found that the reported methicillin-resistant Staphylococcus aureus (MRSA) infections six months after intervention were significantly reduced in two mid Atlantic hospitals in the US. Others found also a significant relationship between organizational climate and the frequency of occurrence of needlestick injuries (Larson *et al*., 2000; Clarke, Sloane, & Aiken, 2002).

In addition to that, this relationship in line with theories such as high reliability organization theory which encompasses several dimensions that almost all converge into creating an organizational climate that probe health care professional towards behaviors and performance which bring down the frequency of occurrence of adverse events. Specifically, the principle construct of the high reliability organization theory is the culture of safety which is the product of individual and group values, attitudes, perceptions, competencies, and patterns of behavior that come in line with the organization's health and safety rules (Health and Safety Commission, 1993)

6.3.8 High Performance Work System and Effective Reporting System

This study found a positive and significant relationship between high performance work system and effective reporting system at the 0.01 level of significance (β= 0.536, t=11.507, p<0.01). This means that the effectiveness of reporting system was determined by high performance work system.

Only a few studies linked HPWS with reporting system, and they were mostly in the industrial field. O'Connor and Fiol (2002) emphasized that high reliability organizations encourage reporting of errors for learning purposes and for organizational improvement

since these types of organizations are mostly decentralized and tend to push decisions down to the lowest level in order to bring about a quick decision. In the health care setting, studies by Larson *et al*. (2000) and Preuss (2003) are among the limited few. In their study of registered nurses and nursing assistants in 50 acute-care hospital units in the US to examine the relationship between high performance work system and several outcomes, one of which was quality of information, Larson *et al*. (2000) found that the high performance work system was linked to the quality of information, measured as the inverse of medication error incidence. They asserted that employees with a system that enables them to use their skills during even seemingly routine tasks improves the effective quality of information they bring to decision-making, and thereby promotes high performance quality.

Donabedian theory postulates a relationship between rules and reporting system, with rules being developed and implemented by the human resource department. These rules in addition to logistics are essential for health care professionals to abide by especially with regards to reporting (Donabedian, 1980).

6.3.9 High Performance Work System and Frequency of Occurrence of Adverse Events (Patient Safety)

Additionally, in achieving objective of this study which the relationship between High Performance work System and Occurrence Frequency of Adverse Events, the finding showed that there is a positive and significant influence which at the 0.01 level of significance ($\beta = 0.649$, $t=4.837$, $p<0.01$), even though this result was not supported the

hypothesis no $H_{3b.}$ Most of the studies which were concerned with the relationship between HPWS and outcome were chiefly carried out in manufacturing field and showed a clear positive impact of HPWS on outcome of the organization (Delaney & Huselid, 1996, Guthrie, 2001, Youndt *et al*., 1996, Barraud-Didier & Guerrero, 2002), however, it had been argued that manufacturing field is very different from health care (Preuss, 2003) and different results could be gained when applying it on health organizations. In general overview, through a meta-analysis study, it was suggested that the service-based industries in general did not demonstrate at least the same strength in effect of HPWS on outcome as that achieved in manufacturing (Combs *et al*., 2006). A convincing explanation was settled by Penfold *et al*. (2008), Gorton *et al*.(2005) who suggested that the differences in outcome in health care services especially when measured in terms of adverse events could be primarily attributed to the fact that the adverse events are to a large extent markedly sensitive to the variations in case mix which limited standardization of the measurement, for example, it had been documented that there is significant difference in occurrence of adverse events between the medical intensive care unit if compared with the medical or surgical general units (Kopp, Erstad, Allen, Theodorou, & Priestley, 2006). This notion was also claimed by Legatt (2011) when they studied the gap between policy and practices in Australian hospitals. Therefore, some researchers addressed that adverse events should be interpreted with care as it is not a robust measure for the quality of care (Uribe *et al*., 2002). In this view we could interpret our findings as being attributed to the possible variation in the mix of patients' clinical characteristics rather than being a direct effect of implementing HPWS. This finding, however, indicated that when the High Performance works System effective the

Occurrence frequency of adverse events (patient safety) will be low at the Saudi Hospitals.

6.3.10 Occurrence Frequency of Adverse Events (Patient Safety) and Overall Of Perception of Patient Safety

Regarding the negative impact between frequency of occurrence of adverse events (patient safety) and overall perception of Patient Safety, this study findings not support the hypotheses which at the 0.01 level of insignificance (β= -0.037, t=0.840, p>0.1), means that, the lower is the frequency of occurrence of adverse events the higher is the perception of patient safety.

The previous studies examined this relationship in opposite direction i.e. it examined the impact of perception of patient safety on occurrence of adverse events, for example in a study conducted in USA, it was cited that low perception of physicians about patient safety is associated with resistance to adoption of proven practices such as "surgical and ICU checklists" which results in increased adverse events (Edwards, 2012). In a quasi-experimental study conducted in Switzerland to examine effect of perception about patient safety on both behavior and frequency of occurrence of adverse events, it was found that patients who were cared by workers in the intervention group were less likely to feel poorly informed about medical errors and perceived behavioral control was less in the control group; however, although the patients in the intervention group were less likely to experience any safety-related incident or unsafe situation, there were no differences in concerns for error reorting during hospitalization (Schwappach, Frank,

Buschmann, & Babst, 2013). In another study conducted in USA to explore behavior of health care workers regarding safety practices in an immunization campaign, it was found that health care workers who were aware about patient safety were more adherent to behavior and practices ensuring lower likelihood for occurrence of preventable errors and they were more likely to report adverse events (Rongxia *et al*., 2014).

Accordingly, the current study could be viewed as an addition for the mutual relationship between frequency of occurrence of adverse events and perception of patient safety. In a more clear view; the previous researches addressed that when the employees have higher perception of patient safety it will be reflected in their practice that ultimately lead to decrease in the number of adverse events; in the current study it was found that also when the number of adverse events occurs at minimum levels, the employees will have perception of working in higher patient safety environment. Therefore, this study can assume that there synergistic relationship between the two variables. In addition to that, this relationship comes in line with theories such as Donabedian theory, which indicates that outcome (represented by perception of patient safety in the current study) is influenced by performance (represented by the number of adverse events in the current study). This finding, however, indicated that when the occurrence frequency of adverse events declines the perceptions of perceived patient safety will be high at the Saudi Hospitals.

6.3.11 Transformational Leadership and Organizational Climate

The finding showed that transformational Leadership had a positive significant impact on organizational climate at the 0.01 level of significance (β= 0.287, t=3.521, p<0.01). This means that transformational leadership is able to develop or improve appropriate organization climate. The finding is in line with previous studies. For example, Jung, Chow, and Wu (2003) examined the relationship between style of leadership and organizational climate, as a mediator of organizational innovation among 32 Taiwanese companies. They found that transformational leadership had a significant and positive relation with both empowerment and an innovation-supporting organizational climate. Similar result was also reported by Sarros, Cooper, and Santora (2008), who revealed that transformational leadership affected organizational climate. In Turkey, Gumusluoglu and Ilsev (2009) revealed that transformational leadership was positively associated with organizational innovation and supported organizational climate. Koene, Vogelaar, and Soeters (2002) also found similar finding when found a positive relationship between transformational leadership and organizational climate in the Netherlands.

Transformational leadership theory postulates that a transformational leader is capable of shaping the climate of an organization because he/she shares values and beliefs with the followers, developing and creating a climate of trust with confidence. Such leader is also capable of inspiring the followers to have a positive attitude and to be able to solve problems (Bass & Avolio, 1995).

6.3.12 The Mediation Effect of Organizational Climate on the Relationship between High Performance Work System and Patient Safety

Researchers indicated that the observed effect of HRM practices on performance of employees with organizations is usually mediated by the organizational climate created by the HRM practices (Burton *et al*. 2004; Parker *et al*. 2003). Based on the psychological background proposed by Stringer Jr. (1968), the HRM practices considerably shape motivation of the employees which is directly reflected on their behavior and performance (Lin, Madu & Kuei, 1999). In another terms, researchers reported that climate has mediating mechanism between HPWS and employee attitudes (Takeuchi *et al*., 2009) and this notion was asserted in an empirical study which was conducted in Taiwan (Chuang & Liao, 2010) which suggested that when employees perceive that the organization is appreciating and making value for their contributions through supportive HR practices, they usually respond reciprocally by cooperative behavior. The same study which aimed at examining the mediating effect of unit climate in the relationship between HPWS and performance in 133 stores, it was found that this relationship is partially mediated by unit climates and collective employee performance (Chuang and Liao, 2010). Also, in another study which was conducted at individual level, the same results were achieved, where it was addressed that the relationship between individual perception of an organization's concern for employees and employee at the individual level of analysis to demonstrate a positive relationship between the shared perceptions of the climate of concern for employees and employee helping behavior at the business-unit level of analysis (Piercy, Cravens, Lane, & Vorhies, 2006). The result

of current study showed a full mediation effect of organization climate on the relationship between high performance work System (HPW) and overall perception of patient safety ($\beta = 0.282$, $t = 4.833$, $p < 0.01$), according to Baron and Kenny's (1986) method. The differences between the findings of these studies and the results of this study, is that it was hypothesizing the mediating effect between HPWS and outcome in terms of patients' safety rather than performance. Therefore, the findings adds to the view about the complex inter relations between HPWS, climate and organizational outcome.

6.4 Contributions of the Study

In this study, possible organizational factors affecting patient safety in public hospitals in Saudi Arabia have been raised. To date, the current study is one of the very few studies conducted in the Arab world to examine such relationships. Hence, this study is an attempt to add to the existing knowledge by examining the mediating effect of organizational climate on the relationship between high performance work system and outcome (represented by patient safety). The current study also has considered the antecedent effect of transformational leadership on HPWS and reporting system. In the following sub-sections, contributions of this study are elaborated.

6.4.1 Theoritical Contributions

This study attempts to increase the understanding of the relationship between transformational leadership, HPWS, organizational climate, effective reporting system and patient safety. Based on previous studies, a research model was developed from which hypotheses were formulated and tested. Generally speaking, the model has

received empirical support, which enhances our theoretical understanding. The study in general has made contributions as follows:

Firstly, the main contribution of the current study is that it offers insight into the relationship between organizational factors namely transformational leadership, HPWS and organizational climate and outcome in a service provider sector in general and health care field in particular. Such study adds to the literature as previous studies were primarily conducted in the manufacturing sector. Moreover, patient safety as an outcome is seldom tackled in previous researches.

Secondly, the antecedent effect of transformational leadership on HPWS in public hospitals is crucial to understand the effect of this type of leadership in health care facilities. The current study is able to show the influence of transformational leadership in on the development on HPWS in an organization. The finding suggests that HPWS is a reflection of transformational leadership which is concerned about the accomplishment of organizational goals via the provision of vision, autonomy, and empowerment to employees.

Thirdly, from the reviewed literature, it could be argued that the current study is the first to examine the mediating effect of organizational climate on the relationship between HPWS and patient safety. The results ascertained the positive relationship between HPWS and organizational climate, positive relationship between organizational climate and perception of patient safety in addition to the significant partial mediating effect of organizational climate between HPWS and patient safety.

Fourthly, the current study has provided empirical support that the perception of health care professionals on patient safety in the hospital was inversely correlated with the frequency of occurrence of adverse events. In other words, the lower the number of adverse events occurring in the hospital, the better the perception of the health care providers on patient safety,.

Finally, transformational leadership, high reliability organization theory (HROT), and Donabedian theories (SPO) are appropriate to provide theoretical explanation for similar researches pertaining to investigation of administrative factors associated with patient safety in service industry in general and healthcare in particular.

6.4.2 Practical Contributions

The present study's results have implications for managers, decision makers and policy planners. Firstly, the results of this study can raise awareness of decision makers about the appropriate style of transformational leadership (TFL) in public hospitals in Saudi Arabia. This involves not only enhancing the TFL style, but also using this leadership style to create a positive climate of safety. In addition, hospital leaders should consider interventions that will help implementing the effective tools and practices to achieve the desired outcome in the area of patient safety.

Secondly, there are clear practical implications of these findings. Leaders in healthcare organizations should focus sharply on developing an advanced and internally coherent HPWS that enhance high performance and commitment among employees. This includes

redesigning a sophisticated and effective appraisal that is applied across most or all staff; implementing a sophisticated training needs analysis and training strategy; encouraging employee participation in decisions affecting their work and the environments in which they work; encouraging team working; providing employment security.

For example, this study has some implications to training activities conducted by hospitals managements in Saudi Arabia. Therefore, the hospital leaders need to design a training program suitable for nurses to help them achieving high level of patient safety.

Moreover, Employee participation involves, among others, the primary practical step in achieving safety is to give due attention to a participation in safety issues at the workplace (Gunawan, 2006). Therefore, hospital leaders should give due attention to employees by allowing them to participate in decisions related to safety and participation in drawing policies and strategies.

In addition, hiring practices crucial requirement to ensure that the appropriate employees are selected for the right position (Turner, 1991). Therefore, hospitals leaders should strengthen the activity of hiring practices for new employees.

Finally, the results of the current study emphasized the role of effective reporting system to reduce the frequency of occurrence of adverse events as well as an increased understanding and awareness of errors. Therefore, hospital leaders should focus on implementing error reporting systems that have been effective in reducing adverse events and encourage healthcare professionals to report fully the frequency of occurrence of adverse events.

6.5 Limitations of the Study

Despite the insight offered, this study has several limitations, both conceptual and methodological, are notable that need to be acknowledged and that should be considered by future studies.

Firstly, because that we could incorporate only a few components of HPWS in our questionnaire because there is no consensus as to what constitutes the most optimum high performance work system (Zacharatos, Barling, & Iverson, 2005) and the lack of such best practices lead to great gaps in the way HPWS practices are operationalized and measured. Future studies may consider other HPWS practices to test the full potential of HPWS in predicting patient safety, and other mediating or moderating variables (e.g., nationality or personality).

Secondly, this study followed a cross-sectional research design to examine the hypothesized relationships at a single point of time. For example, the changes in the frequency of occurrence of adverse events and perception of patient safety could be viewed in both directions. To address the limitation, it is strongly recommended that longitudinal studies should be conducted to examine the effect transformational leadership, HPWS, organizational climate and patient safety. The longitudinal research approach could explain the complex relationship over a long period of time and could explain better the changes that may develop over time among the variables.

Thirdly, the respondents were requested to translate their perception in the survey questionnaire into numbers using a Likert scale. Their answers may be influenced by the

biased perception of the situation (Macinati, 2008). Therefore, this study recommends that future research should consider mixed research design. In other words, quantitative and qualitative research designs should be employed in future research to complement each other.

Finally, the data were gathered from the nurse department's managers in Saudi public hospitals as they are the most representatives to answer the issues related to patient safety in the hospitals. In the future, diverse respondents of data should be considered such as executive nurses, physicians and other clinicians recommended to minimize any potential bias stemming from the level of the informants.

6.6 Suggestions for Future Research

The current study offers several future research opportunities. In addition to the above suggestions on how to address the limitations of the present study, future research may also consider other possibilities.

Firstly, to better understand the process and mechanism of how and why patient safety is achieved, a case study approach could be considered in the future. This approach enables researchers to comprehend the complex relations between the variables. Secondly, future studies may consider examining the research model in other contexts, such as private hospitals other healthcare organizations in Saudi Arabia and testing its validity and applicability in other countries. By doing so, the generalizability of the model can be ascertained.

Thirdly, Literature lacks consistency in what constitutes a high performance system (Lepak *et al*., 2006). Future studies could investigate and test other HPWS components in predicting frequency of occurrence of adverse events, and overall perception of patient safety.

Finally, consistently, with previous scholars who called for necessity to examine the different mediating factors between HPWS and organizational performance which are closely related to outcome (Combs, Liu, Hall Ketchen, 2006; Kohn, Corrigan & Donaldson, 2000; Hofmann & Mark, 2006). Further researches are needed to examine other mediating or moderating variables (e.g., patient safety culture) to interpret the relationship between HPWS and frequency of occurrence of adverse events to verify the inconsistency of the results.

6.7 Conclusion

In conclusion, patient safety is still a substantial problem that affects both the health care system and the community in Saudi Arabia. Previous researchers tended to see the problem from a clinical point of view and less from the administrative side of it. Even if any, the latter studies tended to consider different factors in a disparate manner. Therefore the current study aimed at studying patient safety comprehensively from the administrative view. Hence, transformational leadership, HPWS, organizational climate, and effective reporting system were considered to have an influence on patient safety.

Result found suggests that transformational leadership determined positively HPWS, and these two variables had a direct significant impact on organizational climate, effective

reporting system, and patient safety. Organizational climate was found to play a pivotal role in the model, as it had a direct significant impact on patient safety and frequency of occurrence of adverse events, and had a mediating effect on the relationship between HPWS and patient safety. Surprisingly, the study found a positive relationship between HPWS and frequency of occurrence of adverse events. Even though such contradiction is supported by previous research, further investigations are needed to explain why such finding occurs and if indeed it holds true in different settings and contexts.

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