Nurses' Perceptions of Leadership, Teamwork, and Safety Climate in a Community Hospital in Western Canada: A Cross-sectional Survey Design

by

Antonina De Pau

A Thesis submitted to the Faculty of Graduate Studies of

The University of Manitoba

in partial fulfilment of the requirements of the degree of

MASTER OF NURSING

Faculty of Graduate Studies

University of Manitoba

Winnipeg

ABSTRACT

Patient safety and safety outcomes in hospitals are a major concern. A hospital's safety climate indicates the degree to which the organization prioritizes patient safety and achieves intended care outcomes. Relationships between nurse managers and frontline nurses and relationships between health care team members are pivotal in promoting a positive safety climate which in turn reduces adverse patient outcomes. Therefore, the purpose of this study was to examine frontline nurses' perceived relationships with nurse managers and health team members to identify factors associated with safety climate (SC) in a community hospital located in a western Canadian city.

The study was guided by Leader-Member Exchange (LMX) theory. Leader-Member Exchange theory postulates that dyadic relationships and work roles develop over time through a series of exchanges between nurse managers and frontline nurses. The study further incorporated Team-member exchange (TMX), a theoretical extension of LMX. Team-Member Exchange was used to guide the study of reciprocal exchanges among nurses and other members of the health care team.

A non-experimental, cross-sectional survey design was used to explore the relationship between acute care nurses' perceived LMX, TMX, and SC. A convenience sampling technique was employed. Licensed practical nurses (LPNs) and registered nurses (RNs) were invited to complete a survey package comprised of four scales. A response rate of 31.1% was achieved with N=105. The majority of respondents were female (89.5%), over 45 years of age, and employed part-time. About half of the respondents were diploma-prepared nurses, whereas the other half had a baccalaureate degree in nursing.

Based upon data's non-normal distribution and various levels of variables, Kruskall Wallis H statistics were used to assess and compare groups in terms of the nurses' education, gender, length of experience in their current position, specialty experience, organization experience, age, and LMX, TMX, and SC scores. Age was the sole demographic factor that had a statistically significant positive association with LMX and SC. This finding supported the notion that mature nurses enhance the SC.

The relationship between TMX, LMX, and SC was explored through Spearman's rho correlation statistics. LMX and TMX were found to have statistically significant relationships with SC. Multivariable regression analysis was used to identify factors with an association with SC. Nurses' relationships with team members had a slightly stronger association with SC in comparison with LMX. Over 66% of SC variance was accountable by LMX, TMX, and nurses' age.

This study's results support the nurse manager who partners with nurses to promote team work to deliver safe patient care and accomplish organizational goals. The presence of strong leadership that incorporates LMX and TMX theories into practice with the reliance upon mature nurses may facilitate the attainment of a positive SC and positive patient outcomes. Further longitudinal studies are recommended to add to the knowledge of the relationships between LMX, TMX, SC and patient outcomes.

ACKNOWLEDGEMENTS

No thesis would be complete without acknowledging the professional, financial and personal support I have received over the course of completing my Master of Nursing. It is my extreme pleasure to thank those who made this journey possible.

To my thesis committee: Dr. Judith Scanlan, Dr. Donna Martin, Dr. Diana McMillan, and Dr. Sue Bruning for their never ending patience, time, and contributions to this study. I would particularly like to thank Judy, Donna, and Diana for always being available for any questions or guidance I needed. I would be amiss in not mentioning and thanking profusely Brenden Dufault, biostatistical consultant for the Center of Healthcare Innovation. Finally, to the community hospital and nurses who agreed to participate in the study: without your involvement, this project would not have been possible.

I have been very fortunate to have received funding from the following agencies: Kathleen and Winnifred Ruane Graduate Student Research Grant for Nurses, Irene E. Nordwich Foundation Graduate Award, Mona McLeod Graduate Award, Foundation of Registered Nurses of Manitoba Graduate Award, and GNSA Scholarship. Thank you to these agencies that make continuing education a financial reality and possibility.

Most of all, to my husband, Patrick, and sons, Simon, and Samuel: Fait des beaux rêves et rêve bien des papillons! All is possible with support, love, and determination. Here is to our next challenges and future successes.

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CHAPTER I: INTRODUCTION

Statement of the Problem

The focus on patient safety has increased dramatically since the Institute of Medicine (IOM) (2000) released its report, "*To Err is Human"* in which it stated that between 44,000 and 98,000 patients in the United States die from medical errors each year. Additionally, the IOM (2003) recommended changes in the nursing practice environment to increase patient safety. Although, Canada's health care system is perceived as one of the safest in the world, Canada's safety statistics are equally as alarming as the United States.

Baker et al. (2004) reported that an estimated 7.5 per 100 adult patients admitted to acute care hospitals in Canada experienced one or more adverse events (AEs). AEs are defined as unintended injuries or complications resulting in death, disability or prolonged hospital stay that arose from health care (Baker et al., 2004). Furthermore, 36.9% of these AEs were judged to have been highly preventable (Baker et al., 2004). Risk of injury and death to patients from AEs associated with in-hospital patient care has been consistently featured in research and media reports, emphasizing that hospitals are high risk environments contributing to negative patient outcomes (D'Amour, Dubois, Tchouaket, Clarke, & Blais, 2014; Hutchinson et al., 2006; Kho, Carbone, Lucas, & Cook, 2005).

The Canadian health care system has been undergoing dramatic changes and restructuring in an effort to control mounting costs. Increasing costs pertaining to health care can be attributed to the increasing numbers and acuity levels of patients in hospitals, which in turn have increased the workloads and escalated the decision-making capabilities required of nursing staff (Baker et al., 2004; Laschinger et al., 2008). Under strong economic pressures, hospitals have restructured and redesigned care delivery systems by merging positions and downsizing professional nursing

personnel (Laschinger et al., 2008). Moreover, within the past decade, there has been an increase in scientific knowledge and technology such that current nursing practice is in a constant state of flux. As a result of practice changes, nurses work within a challenging, stressful, and potentially precarious environment that may contribute to unsafe patient care (Laschinger, Almost & Tuer-Hodes, 2003).

As health care organizations, administrators, and leaders are focusing on improving the safety of processes and techniques to reduce AEs, a growing body of research is linking safety climate (SC) and its social component to impact on patient outcomes (Hofmann & Mark, 2006; Kalra, Kalra, & Baniak, 2013; Naveh, Katz-Navon, & Stern, 2005; Neal & Griffin, 2006; Vogus & Sutcliffe, 2007). The term, SC is often used interchangeably with safety culture. Whereas safety culture is a broad term that represents an organizations values and actions related to safety, SC is a subcomponent which focuses primarily upon staff perceptions about the way in which safety is managed within their establishment. Safety is regarded in relation to management or leader support, supervision, risk-taking, safety policies and practices, trust and openness.

Frontline nurses play a central role in the day to day care of patients and are instrumental in preventing AEs, which in turn results in safer patient care. Nurses are the primary care providers who are uniquely positioned to respond to potential threats experienced by their patients in that nurses offer constant health care coverage over a 24 hour period (IOM, 2004). Nurses may work independently or oftentimes, they practice within health care teams. Teamwork is the ongoing process of interaction between health care team members. Registered Nurses (RNs) and licensed practical nurses (LPNs) work together with physicians and other allied health professionals (physiotherapists, dieticians, speech therapists, occupational therapists) and delegate some functions to nursing assistants to provide care to patients. System-wide improvements to patient

care therefore require nursing input to rectify any underlying system error that place patients at risk for an AE. Nurses' contributions in this process depend upon their willingness to work together in a collaborative, cohesive manner and engage in voluntary, extra-role activities (IOM, 2010; Thompson, Hoffman, Sereika, & Lorenz, 2011; Wong & Cummings, 2007). Members of effective health care teams assist each other, share feedback, solve problems, co-ordinate activities, and trust each other (Seers, Petty, & Cashman, 1995). Members take cues from each other or the group. A strong social cohesiveness within the nursing team contributes to determining areas for improvement and reallocation of resources to accomplish the task (Seers et al., 1995). Effective teams are often self-evident because they produce high-quality results. In healthcare, these results include improved patient outcomes and cohesion, and competency or stability for the team itself (Clements, Dault, & Priest, 2007).

While nurses' attitudes, behaviors, and actions are essential components required to keep patients safe, nurse leaders are influential in creating safe patient care environments that may prevent AEs (IOM, 2010; Thompson et al., 2011; Wong & Cummings, 2007). In 2003, the Canadian Nurses Association (CNA) stated that "Leadership plays a pivotal role in the lives of registered nurses and is essential in ensuring quality client outcomes, especially during a time of health care reform" (p. 2). Hence, there is a growing interest that nurse managers, also referred to as nurse leaders, in the context of their leadership role, develop the skills required to motivate frontline nurses, referred here as nurse followers, to contribute to patient safety improvement efforts (Wong & Cummings, 2007; Wong & Giallonardo, 2013). These nurse leaders have the potential to create safe patient care environments through their ability to provide strategic direction, develop and maintain communication lines, and implement care processes to create and ensure a positive SC (Thompson et al., 2011). In the current political environment, where

there is an increased focus on creating healthier practice environments for both nurses and patients, nurse leaders are tasked with meeting the mandate of ensuring high quality safe patient care (Wong & Cummings, 2007). Understanding the roles of the nurse leader/nurse follower relationship; as well as, the impact of this relationship on the team member exchange quality is crucial in the prevention of errors and the development of a positive SC.

Substantial research has been devoted within organizational development and the industrial setting to understand the implications of leader-member exchange (LMX) theory over the past 40 years (Dulebohn, Bommer, Liden, Brouer, & Ferris, 2012; Graen & Uhl-Bien, 1995; Uhl-Bien, 2006). LMX theory focuses on differentiated exchange relationships that a leader develops and maintains with followers within workgroups (Dansereau, Graen, & Haga, 1975). LMX posits that staff member outcomes are improved when leaders develop high quality, individualized relationships with their staff (Schriesheim, Castro, & Cogliser, 1999). Evidence identified that LMX substantially influences employees' commitment, job satisfaction, task performance, extra role behaviors, and turnover intentions (Dulebohn et al., 2012). Graen and Uhl-Bien (1995) argue that LMX may also influence other exchange relationships within the larger system such as Team Member Exchange (TMX). Within team settings, a leader's power to influence team work coordination is greater than any individual team member (Banks, Batchelor, Seers, O'Boyle, Pollack, & Gower, 2014; Uhl-Bien, 2006).

Significance of the Study

Patient safety and safety outcomes in hospitals are a major concern. Evidence is growing that supports the idea that an organization's SC indicates the degree to which the organization prioritizes patient safety and achieves intended care outcomes (Huang et al., 2007; Jiang, Yu, Li, & Li, 2010; Pringle, Weber, Rice, Kirisci, & Sirio, 2009; Singer, Lin, Falwell, Gaba, & Baker,

2009). The relationships between the nurse leader and nurse followers and between the members of the health care team are pivotal in promoting a positive SC which contributes to positive safety outcomes (Wong & Cummings, 2007; Wong & Giallonardo, 2013). A review of current evidence indicated that further studies are needed to clarify how leadership and teamwork shape SC. Therefore, it is important to examine the perceptions of acute care nurses about their relationships with the unit nurse managers and team members to determine potential factors associated with SC.

Purposes of the Study

The purposes of this study were twofold: (a) to determine acute care nurses' perceptions of LMX (quality of nurse manager-clinical nurse relationships), TMX (quality of exchange relationships among health care teams), and SC; and (b) to examine the associations between demographic factors (age, gender, education, length of experience) to LMX, TMX and SC.

Hypotheses

Based upon current evidence, the hypotheses to be addressed at the individual nurse level in this study were as follows:

Hypothesis 1: Acute care nurses' perceptions of LMX will be positively associated with their perceptions of SC.

Hypothesis 2: Acute care nurses' perceptions of TMX will be positively related to their perceptions of SC.

Hypothesis 3: Acute care nurses' LMX scores will be more strongly associated with SC than their TMX scores.

Definition of Terms

To avoid misunderstanding and clarify meanings, researchers are encouraged to provide clear definitions of the main terms (Polit & Beck, 2012). Moreover, clarification of the meaning of the key constructs ensures transparency of the study. In the following section, key terms will be defined.

Leader-Member Exchange (LMX)

The differentiated or individualized dyadic (one on one) relationship that develops between a frontline leader and their staff member is based on mutual trust, respect, and obligation. The strength of this relationship can be measured at the individual level by the LMX-7 survey (Graen & Uhl-Bein, 1995).

Leadership

Leadership is the process whereby an individual (nurse manager/leader) influences a group of individuals (staff nurses) to achieve a common goal (Northouse, 2010, p.3).

Team-Member Exchange (TMX)

Team-member exchange (TMX) is defined as an individual member's perceptions of his or her exchange relations within the group or team (Seers, 1989). Emphasis is upon the exchange relationship, reciprocal commitment, and expertise contributed within the exchange relationship (Seers, 1989; Seers et al., 1995).

Nurse Leader

The nurse leader is the individual who has accountability and responsibility for the nursing staff and thus the delivery of patient care at the clinical unit level.

Nurse Follower

The nurse follower refers to the frontline nurse or in other words, the staff nurse who reports to the nurse leader. The individual will participate actively or passively based on their relationship with the nurse leader (Graen & Uhl-Bien, 1995). In this study, the nurse follower will be the LPN or RN, employed full-time or part-time, in the designated acute care units of the participating, community hospital.

Nurse Leader-Nurse Follower Relationship

The nurse leader-nurse follower relationship is the interpersonal interaction between a nurse leader and the nurse under his/her supervision. This interaction may range in quality from a low quality relationship to a desirable high quality relationship (Graen & Uhl-Bien, 1995).

Safety Climate

Safety climate is the current state of an employee's actions and behaviours that manifest the underlying safety culture (Clarke, 2006, 2010; Schneider, 1990; Squires, Tourangeau, Laschinger, & Doran, 2010; Zohar, Livine, Tenne-Gazit, Admi, & Donchin, 2007). In this study, the safety climate is defined as the perceptions of an employee regarding safety policies and procedures, expected safety behaviors, and desirable behaviors reinforced and rewarded by the organization.

Staff and Unit Characteristics

For the purposes of this study, staff nurses are defined as licensed practical nurses (LPNs) and registered nurses (RNs) who are employed part-time or full-time in an acute care unit. Staff characteristics include the staff nurse's age, gender, initial nurse preparation, additional education, total years of healthcare experience, years of service in the current unit, years of service in the organization, as well as the nurse's direct contact with patients. Unit

characteristics are defined as the staff nurses' experience working with the particular nurse leader and will include the timeframe or length of the nurse leader-nurse follower relationship.

Based upon the review of relevant literature, staff and unit characteristics may play a significant role in perceived safety climate.

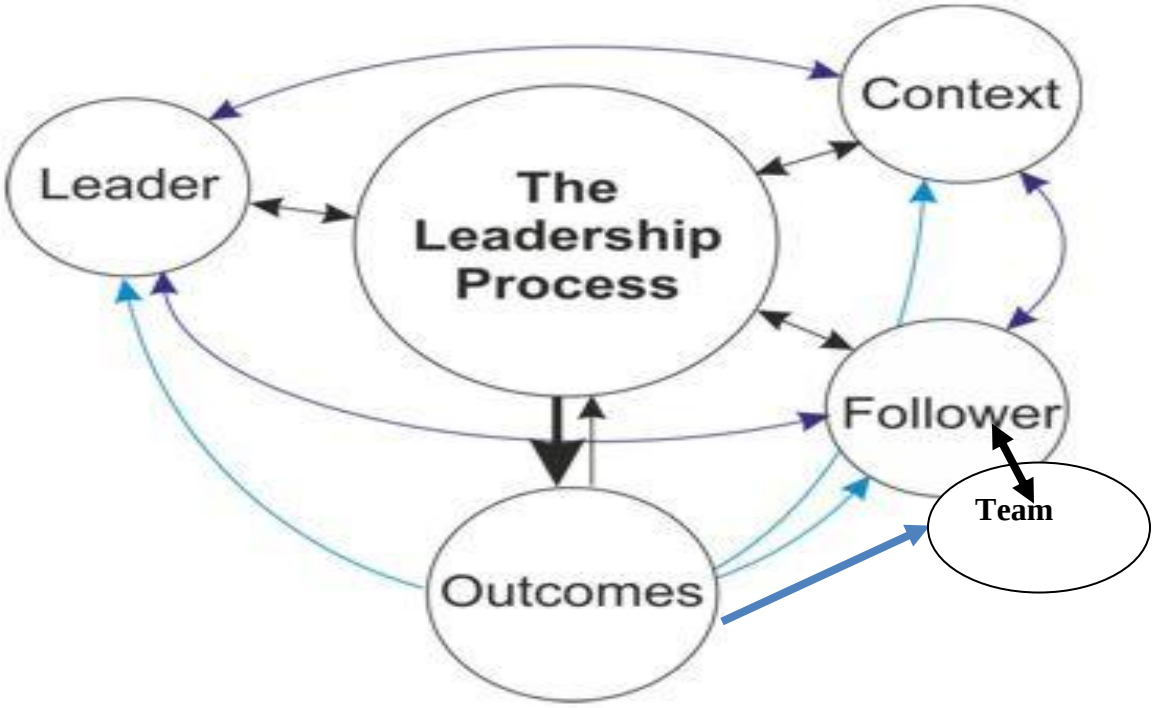
Guiding Framework

The guiding framework, "Leadership Process Model," developed by Dunham and Pierce (1989), has been adapted with permission for this study (*Figure1*). The framework highlights that leadership is a dynamic and continuous process. The model shows the relationship between these five key factors that contribute to leadership success or failure. These factors are:

1. **The Leader:** The individual who takes charge (nurse leader/manager), and directs the group's (nurses') performance.
2. **Followers:** The individuals (acute care nurses') who follow the nurse leader/manager directions.
3. **Teams:** Groups of individuals (health care team) who assist and participate to care for patients.
4. **The Context:** The environment and situation in which the work is performed. Twenty-four hour patient care performed on an acute care unit in a hospital.
5. **Outcomes:** The results of the process. The goal is to achieve a positive safety climate.

In this study, the outcome measured was SC.

Figure 1: Guiding Framework - The Leadership Process Model



Note: Adapted with permission from Dunham, R.B., & Pierce, J.L. (1989).

Organization of Thesis

This study is presented in five chapters. Chapter I introduced the statement that frontline nurses play a central role in the day to day care of patients and are instrumental in preventing AEs, which in turn results in safer patient care. Evidence suggests that LMX and TMX may influence SC. Thus investigating acute care nurses' perceptions of LMX (quality of nurse manager-clinical nurse relationships) and TMX (quality of exchange relationships among health care teams) and the association between demographic variables, LMX, TMX, and SC was a priority. In Chapter I, definitions of key terms were provided.

Chapter II includes a review of the literature on relational nursing leadership and the relationships between nurse managers and staff nurses with consideration to LMX, TMX, and SC. The theoretical framework of LMX, guiding this study is described.

Chapter III provides a description of the research methods used in this study, including a description of the sample and study instruments. Chapter IV will present the results of the research study. In conclusion, Chapter V discusses the implications of the study's results, limitations, suggestions with regard to future research, and provides recommendations for nursing administration.

CHAPTER II: LITERATURE REVIEW

This chapter will summarize the current literature about nursing leadership and key factors that may influence safety climate. A review of the literature is provided to ground this study, enhance the understanding of the topic, and argue for the need for this study.

In all areas of practice, nurses carry out their daily activities to enhance patient safety. Despite these efforts, as many as 88 out of 1,000 patients will suffer injury or illness as a consequence of treatment (Spear, 2005). As a result, researchers looked to practices within other industries such as aviation and car manufacturing to learn about strategies that may produce high quality outcomes without compromising efficiency (Vogus, Sutcliffe, & Weick, 2010). A key factor of practices in the above industries is the emphasis on directing attention to leaders, staff, and their perceptions of SC.

Within health care, evidence is emerging that supports claims that SC is associated with the degree to which the organization prioritizes patient safety and actually achieves intended care out comes (Huang et al., 2007; Jiang et al., 2010; Pringle et al., 2009; Singer et al., 2009). The IOM (2000) report urges healthcare organizations to strengthen their patient SC as one solution to prevent medical errors. There are gaps in knowledge, however, related to the specific mechanisms by which SC and safety culture are bolstered. Current evidence suggests that leaders who foster SC through their personal example amplify the importance of these values, attitudes, and behaviors that are shared with staff and tend to heighten safety motivation (i.e., willingness to exert extra effort) (McCaughey, DelliFraine, McGhan, & Bruning, 2013; Neal & Griffin, 2006).

The Current Evidence

This literature review examines the current state of knowledge on the effectiveness of nurse manager relational leadership, relationships between nurse leaders and nurse followers through LMX, nurses' perceived quality of the health care team through TMX, and the effects of these relationships on SC.

Literature Review Method

The located literature for this review was the result of a search of reputable databases of nursing, medical, and psychology research - Cumulative Index to Nursing and Allied Health Literature (CINAHL), EBSCOhost, PubMed and Scopus. The search included combinations of these key words: "leadership", "nurs*", "relational", "health care", "safety", "safety climate", "leader member exchange", "LMX", "team member exchange" and "TMX". In addition, a manual search of references cited in the published studies was performed. Although the literature was initially explored within the healthcare field, research from organizational behavior was included as it became evident that research is lacking in the health care domain.

Leadership

The study of leadership can be a difficult concept given the intangible nature of human relationships. Nonetheless, by theorizing about observed phenomena, predictions can be made that can be tested in the real world as well as in more controlled settings (Northouse, 2010). Leadership has been studied in a variety of fields including, but not limited to, psychology, education, management, the military, and healthcare. As such, leadership is not a new concept in the nursing literature, but is one that is increasingly under investigation during challenging health care climates experienced in the present day.

Developing future nurse leaders continues to be one of the greatest challenges faced by the nursing profession (Mahoney, 2001). Nurse managers' play a critical role in an ever changing healthcare environment wherein the norm is characterized by increasing patient acuity, shortages of nurses, and increased spans of control. The present climate is one of increased levels of frustration and reduced quality of working relationships which jeopardize patient safety (Laschinger, Purdy, & Almost, 2007). Therefore, it is important to examine the perceived relationships between nursing leadership and nurse followers, as well as the nurses' perceived quality of the health care team exchanges as potential factors associated with perceived safety climate.

Definition of Leadership

Northouse (2010) defines leadership as "a process whereby an individual influences a group of individuals to achieve a common goal" (p. 3). The leadership process contains the following commonalities:

1) Leadership is part of an interpersonal process suggesting the leader affects and is affected by followers;
2) Leadership involves influencing others;
3) Leadership occurs within the context of a group;
4) Leadership involves goal attainment;
5) Goals are shared by leaders and their followers (Cummings et al., 2010; Northouse, 2010).

Defining leadership as a process suggests that leadership is not a characteristic or trait with which only a few people are endowed at birth; rather leadership is a relational process that occurs between the leader and the follower.

Relational Leadership

Uhl-Bien (2006) describes relational leadership as a relatively new term in the leadership literature, which has two differing perspectives. The entity perspective focuses on identifying attributes of the individual leader/follower as they engage in interpersonal relationships that encompass perceptions, intentions, behaviors, personalities, expectations, and evaluations relative to their relationships with one another.

In contrast, the relational perspective does not focus on identifying attributes of individuals involved in leadership behaviors or exchanges, but rather on the social construction (Uhl-Bien, 2006). Relational leadership describes the active roles of both leaders and followers within two-way influential relationships between leaders and followers (Uhl- Bien, 2006). Relational leadership is foundationally based, in part, on the concept of an exchange process between two parties. Exchange process, as applied in leadership studies, describes relationships existing as exchanges of desirable outcomes between leaders and individual followers (Blau, 1960; Cook & Whitmeyer, 1992; Homans, 1958).

From the entity perspective, leadership can be seen as a two-way influential relationship between a leader and a follower aimed primarily at attaining mutual goals (Graen & Scandura, 1987; Graen & Uhl-Bien, 1995). In relationship-based approaches, the focus is on interpersonal relationships, most often among leader–member dyads (Graen & Scandura, 1987; Scandura & Graen, 1984; Uhl-Bien, Graen, & Scandura, 2000).

The relational or emotional task of the leader is essential in developing constructive relationships with staff and has a direct impact on outcomes for organizations, patients, and health care providers (Cummings et al., 2010; Goleman, Boyatzis, & McKee, 2004; Wong & Cummings, 2007). Leaders, who emotionally motivate followers in a positive and constructive

way, facilitate best practices. Goleman et al. (2004) refer to this effect as resonance. The ability of leaders to manage and direct the feelings of followers to promote group attainment of goals depends upon their ability to create resonance.

Cummings (2004) contends resonant leaders are emotionally intelligent, concerned about their staff welfare, attuned to their concerns in building positive work environments, empathetic to others' feelings, and supportive of their subordinates' success. Resonant leadership is reported as being able to mitigate the detrimental aspects of the nursing work environment and enhance safe patient care (Cummings, Hayduk, & Estabrooks, 2005).

Resonant Leaders

Resonant leaders inspire, coach, develop, and include others in decision making and in periods of difficulty (Boyatzis & McKee, 2005; Cummings et al., 2010; Squires et al., 2010). Resonant leaders demonstrate a high level of emotional intelligence (EI) by understanding the emotional atmosphere around them, using empathy, and managing their own emotions effectively to build strong, trusting relationships, and creating a climate of optimism that inspires commitment (Boyatzis & McKee, 2005; Cummings et al., 2010; McKee & Massimilian, 2006; Squires et al., 2010).

Salovey and Mayer (1990) first coined the term "emotional intelligence" and proposed that EI is comprised of two areas: experiential (ability to perceive, respond, and manipulate emotional information without necessarily understanding it) and strategic (ability to understand and manage emotions without necessarily perceiving feelings well or fully experiencing them). Goleman, a psychologist, was inspired by Salovey and Mayer's (1990) findings and began to conduct his own research in the area and eventually wrote *Emotional Intelligence* (1995), the

landmark book which familiarized both the public and private sectors with the concept of emotional intelligence.

Goleman's (1995) concept outlines four main EI constructs, which in essence are the basic ingredients of resonant leadership. The first construct, *self-awareness*, is the ability to read one's emotions and recognize their impact while using gut feelings to guide decisions. *Self-management*, the second construct, involves controlling one's emotions and impulses and adapting to changing circumstances. The third construct, *social awareness*, includes the ability to sense, understand, and react to others' emotions while comprehending social networks. Lastly, *relationship management* entails the ability to inspire, influence, and develop others while managing conflict (Goleman, 1998).

Each construct of EI consists of several subsets with 18 competencies that reflect emotionally intelligent behaviour (Goleman et al., 2004). Personal competence contains self-awareness (emotional self-awareness, self-assessment, self-confidence) and self-management (emotional self-control, adaptability, achievement, initiative, optimism, and transparency) constructs and refers to how well the leader understands and manages his/her own emotions. Social competence contains social awareness (empathy, organizational awareness, service orientation) and relationship management (developing others, influence, communication , conflict management, leadership, change catalyst , building bonds, and teamwork and collaboration) constructs and reflects how well the leader recognizes and manages the emotions of others, builds relationships, and works in complex social systems (Goleman et al., 2004).

Goleman et al. (2004) further distinguished six leadership styles/behaviours that are interchanged seamlessly depending upon the situation. Four leadership styles that create resonance and increase performance are visionary, coaching, affiliative (relationship

management), and democratic. The two leadership styles that should be used sparingly and within specific circumstances are pacesetting and commanding as these styles may result in dissonance (Goleman et al., 2004).

As tasks of leadership become more complex and collaborative, relationship skills between the leader and the follower become crucial. A recent literature review reveals widespread support of EI concepts within nursing and postulates that EI leaders positively influence patient care by motivating nurses to make high-level practice decisions (Bulmer Smith, Profetto-McGrath, & Cummings, 2009). Furthermore, EI is viewed as an executive leadership skill that benefits patient care, safety climate, nurses, and organizations (Bulmer Smith et al., 2009; Wallace, Popp, & Mondore, 2006).

Establishing positive working relationships, a core element of LMX, is used by leaders to link the clinical context, the implementation of nursing practice with the delivery of quality patient care, and a secure safety climate (Bulmer Smith et al., 2009; Wallace et al., 2006). EI leaders possess skills and abilities to motivate others through relationships as they have the ability to motivate passion and dedication in the workplace and ultimately, this ability is thought to influence patient care practices or outcomes (Bulmer Smith et al., 2009; Goleman, 2005). EI leaders secure a commitment for excellence in practice through EI relationships that promote improvements in thinking, critical decision making, and care delivery (Goleman, 2005; Uhl-Bien, 2006).

Organizational literature supports the notion that resonant leaders, by virtue of their EI, know how to manage emotions within complex healthcare systems (Bulmer, Smith et al., 2009). Leaders effect change by creating trusting environments where emotion is valued (Goleman, 1998). Further, literature suggests that when supervisors show their employees' consideration,

respect and support through their actions and communication exchanges, higher quality LMX relationships and trust are likely.

In the following section, a particular relational theory will be presented. This theory was generated by scholars examining leadership.

Theoretical Framework: Leader-Member Exchange Theory

Leader Member Exchange (LMX) theory is considered a relational approach of leadership (Northouse, 2010; Uhl-Bien, 2006; Yukl, 2006). Relational approach theory is based, in part, on the concept that social behavior is the result of an exchange process between two parties. Exchange process, as applied in leadership studies, describes relationships existing as exchanges of desirable outcomes between leaders and individual followers (Blau, 1960; Cook & Whitmeyer, 1992; Homans, 1958). Dienesch and Liden (1986) in their review of the LMX literature determined the existence of the social exchange element of mutuality, specifically the dimensions of perceived contribution to the exchange, loyalty to the other dyadic member, and mutual affection for the other member as central focal points explaining the development of LMX. Graen and Uhl-Bien (1995) identified the development of LMX theory across four distinct stages of development: (a) Vertical Dyad Linkage (VDL) theory with a focus on identifying in-group and out-group relationships, (b) LMX theory with a focus on leader-member quality of relationship, (c) dyadic partnership building, and (d) group development as systems of interdependent dyadic relationships. The leader-follower quality of relationship and the dyadic partnership building concepts will be explored.

Quality of LMX Relationship and Organizational Variables

Researchers conducted literature reviews to determine key elements in the LMX relationship and how LMX is related to organizational variables (Dulebohn et al., 2011; Graen &

Uhl-bien, 1995; Schriesheim, Castro, & Cogliser, 1999; Ilies Nahrgang & Morgeson, 2007). Leaders can significantly influence individual, group, and organizational performance.

Antecedents to LMX

The development of LMX traces the leader-member dyadic relationship from an economic exchange to a social exchange. Antecedents to LMX include follower characteristics, leader characteristics, and interpersonal relationships.

Follower Characteristics

Follower characteristics that influence LMX include the "Big Five" personality factors (conscientiousness, extraversion, agreeableness, openness, and neuroticism), locus of control, positive affectivity (PA), and negative affectivity (NA) **(**Dulebohn et al., 2011**).** Conscientiousness is consistently linked as the most reliable predictor of job performance (Dulebohn et al., 2011). Followers' personality traits including conscientiousness, extraversion, and low negative affect are positively related to their perception of LMX quality (Bernerth, Armenakis, Field, Giles, & Walker, 2007; Liden, Sparrowe, & Wayne, 1997), while followers' neuroticism and openness to experience are negatively related to their perception of LMX quality (Bernerth, et al., 2007). Dulebohn et al. (2011) posit that agreeableness was positively associated with cooperation, helping behaviors, and adaptive social behaviors. Agreeableness also is positively associated to reciprocity behavior which is a central component to LMX (Dulebohn et al., 2011). Uhl-Bien and Maslyn (2003), in their research on reciprocity in follower-leader relationships, found low-quality relationships were characterized by high immediacy, high equivalence, and high returns, while high-quality relationships were characterized by mutual-interest. Open minded followers are more likely to pursue and accept expanded roles thus transcending relationships based solely on economic exchange and formally

agreed employment contracts (Dulebohn et al., 2011). Neurotic followers are described as having trait descriptors such as anger, anxious, depressed, embarrassed, worried, and insecure and have been found to limit relationships based upon trust, commitment, and social skills (Bernerth et al., 2007).

Leader Characteristics

Leader behaviors, perceptions, and personality factors may be considered as antecedents to LMX. These characteristics include: leader's expectations of followers, contingent reward behavior, transformational leadership, extraversion, and agreeableness.

Leaders' expectations of followers' success or failure within a work atmosphere is relevant to LMX. Leaders' evaluation and expectation of followers lead to a potential social exchange relationship (Dulebohn et al., 2011). Social exchange relationships might involve the leader assigning followers responsibility on important tasks and providing increased support. Leader expectations of followers' success have been shown to be positively related (p=.37) to follower perceptions of LMX in experimental and field studies related to follower work behaviors (Dulebohn et al., 2011).

Followers who receive contingent reward behavior such as feedback, clarification, recognition, and praise for their work develop a sense of obligation to their leader and are more likely to experience a higher quality relationship with them (Dulebohn et al., 2011). High quality LMX relationships are based on trust, respect, and mutual obligation which would not be present if a leader did not recognize and reward good performance and clarify expectations (Dulebohn et al., 2011; Graen & Uhl-Bien, 1995; Uhl-Bien, 2006). In their meta-analysis, Dulebohn et al. (2011) found a significant relationship between leaders' contingent rewards behavior and perceptions of LMX.

Followers respond positively to transformational leaders who inspire and motivate (Dulebohn, et al., 2011). Leaders who offer an appealing work environment may obtain high quality relationships with their followers (Uhl-Bien, 2006). Dulebohn et al. (2011) reported a significant relationship between transformational leadership and LMX.

Extraversion includes the qualities of socialization, articulation, assertiveness, and status seeking. Judge, Bono, Ilies, and Gerhardt (2002) found extraversion as "the most consistent correlate of leadership across study settings and leadership criteria" (p.765). Additionally, extraverted leaders were perceived as effective by the followers. Leader extraversion and agreeableness positively relate to follower perceptions of LMX (Dulebohn et al., 2011).

Interpersonal Relationships

Beyond follower and leader characteristics are variables connected to the relationship between the leader and the follower and include: perceived similarity, affect/liking, ingratiation, self-promotion, assertiveness, and leader trust.

Dyadic relationships are more cohesive when individuals share common interests, values, and attitudes (Dulebohn et al., 2011). Thus, similarity between individuals encourages attraction and mutual liking. Uhl-Bien (2006) caution dissimilarity between leader and follower may lead to unfavorable interpersonal relationships. Dulebohn et al. (2011) found perceived similarity is positively related (p =.50) to follower perceptions of LMX.

Individuals gravitate toward and form beneficial relationships with people they like (Dulebohn et al., 2011). Liking or affect is an element of LMX quality which plays an important role in the relationships between leaders and followers (Laschinger et al., 2007). Researchers have linked liking or affect to positive individual and organizations outcomes, such as job satisfaction, commitment, and job performance (Schriesheim et al., 1999; Graen & Uhl-Bein,

1995). Follower affect or liking for the leader was significantly related to LMX (Dulebohn, et al., 2011).

Ingratiation, self-promotion, and assertiveness are three tactics used by followers to alter perceptions that leaders form of them (Dulebohn et al., 2011). Successful influence of leaders produces positive evaluations of followers and serves as a basis for interpersonal relationships at work (Wayne, Shore, Bommer, & Tetrick, 2002). Ingratiation and self-promotion tactics were positively correlated to LMX (Dulebohn et al., 2011). While Dulebohn et al. (2011) postulated that assertiveness would translate to a low quality LMX relationship, this hypothesis was not supported in their meta-analysis of 247 studies.

LMX is defined as a trust-building process (Liden, Sparrowe, & Wayne, 1997). Trust is formed as a follower and a leader makes and keeps commitments. Trust is found as both an antecedent and a dimension used to measure the relationship quality of the LMX relationship (Brower, Lester, Korsgaard, & Dineen, 2009). Prior to developing high quality relations, leaders need to trust that followers are competent and can perform their jobs (Dulebohn et al., 2011). Dulebohn et al. (2011) found leader trust to be positively related to follower perceptions of LMX.

Consequences of LMX

Completing the process, researchers have suggested LMX results in consequences (Dulebohn et al., 2011; Liden et al., 1997; Schyns, 2006). When leaders and followers develop and maintain a relationship, they mutually share positive perceptions of their relationship, and subsequently, both parties gain in terms of work outcomes (Cogliser, Schriesheim, Scandura, & Gardner, 2009; Masyln & Uhl-Bien, 2001). Therefore, the quality of the leader-follower relationship plays a significant role in determining outcomes or consequences.

Schriesheim et al. (1999), in a meta-analysis found LMX across 79 independent studies to be more strongly related to subjective outcomes including member performance ratings, member satisfaction, member organizational commitment, and member affectivity than objective outcomes such as productivity and turnover.

Citizenship behavior describes behaviors employees engage in beyond their prescribed roles. These behaviors include individual-targeted, altruistic behaviors providing immediate benefit to specific individuals and indirect benefit to the organization, and organizational-targeted behaviors including organizational loyalty, job dedication, and conscientiousness (Podsakoff, MacKenzie, Paine, & Bachrach, 2000). Illies et al. (2007), in their meta-analysis of 50 independent research studies with a combined sample size of 9,324, found a moderately strong, positive relationship between LMX and citizenship behaviors. Dulebohn et al. (2011), in their meta-analysis of 247 studies, re-examined the relationships tested by Schriesheim, Castro, and Cogliser (1999) and Ilies et al. (2007). Significant associations were obtained between LMX and the behavioral outcomes of job turnover, job performance, turnover intentions, and organizational citizenship behavior.

Research measuring affective and normative commitment determines whether there is a relationship between LMX quality and followers' level of organizational commitment. Affective commitment is an emotional attachment to the organization that is characterized by an individual enjoying being involved and identifying with the organization. On the other hand, normative commitment is a belief about one's responsibility to the organization. Essentially, normative commitment consists of an individual's feeling of obligation to the organization which includes behaving in ways that meet the organization's goals because they believe this is the right thing to do. LMX was found to be directly related to affective commitment (Dulebohn, et al., 2011;

Liden, Wayne, & Sparrow, 2000). LMX quality was found to have a significant association with both affective and normative commitment (Dulebohn et al., 2011; Lee, 2005).

LMX and Nursing Leadership Research

Nursing work environments are complex adaptive systems, and as such, the relationship between nurse leaders, nurse followers, and patient safety climate need to be understood as they are inter-related. Only recently have studies examined LMX quality in nurse leader-nurse follower relationships and the impact on nurse, work, and patient outcomes (Hiller, DeChyrch, Murase, & Doty, 2011).

Kalisch and Lee (2012) identified a lack of congruence of the perceptions between nurse leaders and nurse followers. Utilizing LMX as a conceptual framework, a descriptive cross-sectional design was used. The MISSCARE survey, a 4-point Likert scale, measured nursing staff perceptions of missed care and reasons for missed care. The study of over 4,415 nursing staff and 104 nurse leaders acknowledged the nurse leaders' overestimation of missed work and underestimation of resources as identified by the nurse followers. Research in this domain demonstrated consistently that incongruence between leaders and followers results in negative outcomes including lower job satisfaction, lack of role clarity, low levels of trust, higher turnover, lower job performance, diminished organizational commitment, resistance to change, less citizenship behavior, and decreased safety climate (Cummings et al., 2010; Schriesheim, Castro, & Cogliser, 1999; Ilies et al., 2007; Squires et al., 2010; Thompson et al., 2011).

Davies, Wong, and Laschinger (2011) examined relationships among structural empowerment, LMX quality, and nurses' participation in personal knowledge transfer activities. This study was a secondary analysis of data collected in a non-experimental, predictive mailed survey design study in which Laschinger (2008) sought to understand how leader-nurse

relationships and empowerment in work settings influence knowledge transfer that contributes to evidence based practice with safer outcomes for the patient population. Three standardized self-report instruments were used and included: (a) the Conditions of Work Effectiveness Questionnaire II (CWEQ-II) which measured structural empowerment; (b) the LMX-MDM (multi-dimensional Measure) scale used to measure LMX quality; and (c) Personal Knowledge Transfer (PKT) that measured participation in personal knowledge transfer activities. The combination of LMX and structural empowerment accounted for 9.1% of the variance in personal knowledge transfer while structural empowerment ($r = 0.28$, $p < 0.001$) was significantly and positively related to nurses' personal knowledge transfer. The mutual affection nurses have for their leader (affect; $r = 0.49$, $p < 0.001$) and the respect they feel from their leader ($r = 0.45$, $p < 0.001$) were the dimensions of LMX most highly correlated with empowerment suggesting that these aspects of the relationship that nurses have with their leader are strongly linked to nurses' access to empowerment structures in the work environment (Davies et al., 2011). Furthermore, the role nurse leaders' play in supporting work environments contributes to the transfer of knowledge in practice thus encouraging evidence based care (Davies et al., 2011).

Farr-Wharton, Brunetto, and Shacklock (2012) examined the leader-follower relationship on nurses' use of intuition, perceptions of empowerment, and affective commitment within a cross sectional design using a survey based self-report strategy. LMX was evaluated using the LMX-7 scale (Graen & Uhl-Bien, 1995); intuition was measured using a new 3 item scale, Spreitzer's (1996) four instruments 'Self-Determination, Meaning, Competence, and Impact' operationalized empowerment, and Allen and Meyer's (1990) commitment instrument was used to measure affective commitment. All tools had Cronbach's Alpha scores measuring reliability from 0.707 to 0.935. The researchers incorporated correlations, regression analysis,

MANOVAS, and path analysis to address their hypotheses. Findings supported that the leader-nurse relationship significantly affects nurses' use of intuition (LMX explained approximately 10.7% of the variance related to Gen Y's use of intuition ($F = 28.635$, $p < 0.001$, beta score for LMX = 0.327, $p < 0.001$). Additionally, perceptions of LMX, intuition, and empowerment explained 26.4%-33% of the variance related to affective commitment or intention to stay. As self-report surveys were used, there is an opportunity for common methods bias. Furthermore, this study investigated only private sector hospital nurses and would benefit from the inclusion of public sector nurses.

Chen, Wang, Chang, and Hu (2008) recruited a convenience sampling of 280 dyads of nurses from three medical centers and three regional hospitals. The study hypothesised that trust was a mediating role in LMX and organizational citizenship behaviour (OCB). A measurement used to evaluate nurses' perceptions of LMX was the 11 item, 5 point Likert scale 'LMX Questionnaire' developed by Liden and Maslyn (1998). The researchers identified that high-quality LMX was positively associated with nurse follower perceptions of supervisor support, trust, and OCB amongst the nurses (Chen et al., 2008). These findings imply a higher level of LMX can enhance nurses' commitment, significantly reduce turnover, promote OCB, and has potential to create safer patient outcomes (Chen et al., 2008).

Blau, Moideenkutty, and Ingham (2010) examined organizational versus occupational sportsmanship behavior, or in other words, occupational citizenship behavior, and then investigated the relationship of LMX to each concept. The survey study had a 51.12% response rate among 223 matched nurse-supervisor dyads. LMX quality was positively related to both organizational sportsmanship ($r = 0.15$, $p<0.05$) and occupational sportsmanship or OCB ($r = 0.16$, $p<0.05$). The results reinforce the importance of follower perceived high LMX with their

leader in promoting positive work outcomes. A study limitation includes the inability to control for the influence of contextual variables such as type of nursing unit, clinical setting, and also measurement issues.

Han and Jekel (2011) investigated whether job satisfaction mediates between LMX and nurse turnover intentions. Using a cross sectional survey design, the questionnaire was distributed to 400 nurses with a final sample size of 181 or a 49.2% response rate. Results based on linear regression indicate LMX had a significant and positive effect on job satisfaction (β= 0.50, $p < 0.001$), while job satisfaction was found to be negatively related to turnover intentions ($\beta = -0.64, p < 0.001$). This study suggests that higher job satisfaction results in lower turnover intentions.

Limited research has been conducted on nursing leadership and LMX. The located studies demonstrated a lack of congruence of perceptions between nurse leaders and nurse followers in acute care hospitals as to the extent and type of missed nursing care and the presence of teamwork (Kalisch & Lee, 2012). Additionally, research has demonstrated mutual affection, trust, and respect highly correlate with empowerment (Davies et al., 2011). Leader-follower relationships significantly affect nurses' use of intuition and empowerment which impacts upon nurses' levels of affective commitment (Farr-Wharton et al., 2012). As well, researchers have identified that a higher level of LMX can enhance nurses' commitment, significantly reduce turnover, promote OCB, and has potential to create safer patient outcomes (Chen et al., 2008; Squires et al., 2010; Wong & Cummings, 2007). Furthermore, LMX had a significant and positive effect on job satisfaction, whereas job satisfaction was found to be negatively related to turnover intentions (Han & Jekel, 2011; Laschinger et al., 2007). However, researchers argue there is a paucity of research on LMX and safety climate despite its importance in predicting

patient outcomes (Squires et al., 2010; Thompson et al., 2011). Further research is required to determine how various factors contribute to nurses' perceptions of safety climate. Based upon available evidence, one may hypothesize that LMX would have a positive association with SC.

Team Member Exchange

Team-member exchange (TMX) is a theoretical extension of LMX (Seers, 1989). Please see Figure 1. This exchange is concerned with the relationship between an individual and her or his team members and thus indicates the effectiveness of the member's ongoing relationships within the team. Team-member exchange quality (TMX) is defined as an individual member's perceptions of his or her exchange relations within the group or team (Seers, 1989). TMX can be categorized within two groups, TMX contributions and TMX receipts (Ford & Seers, 2006). Specifically, TMX contributions refer to actions such as supporting group members when they are busy, recognizing other members for their ideas, and communicating openly. TMX receipts refer to the reciprocal opposites such as other members supporting co-worker when co-worker is busy, recognizing co-worker ideas, and communicating openly with co-worker.

Seers (1989) put forth team-member exchange quality (TMX) as a method to assess a group member's perceptions of his or her role within the group, as well as his or her exchange relationships within the group as a whole. Specifically, TMX focuses on an individual's willingness to assist other members, share ideas and feedback and, in turn, provide information to other members, and receive recognition from other members (Seers, 1989; Seers et al., 1995). Research on TMX has primarily focused on identifying different types of justice, team temporal scope, communication mediation, and supervisor-subordinate relationships as the antecedents of TMX (Alge, Wiethoff, & Klein, 2003; Hiller & Day, 2003; Liden et al., 2000; Sherony & Green, 2002; Tse & Dasborough, 2008). Research on consequences of TMX include; cohesiveness,

participation, climate, performance, and efficiency (Alge et al., 2003; Ford & Seers, 2006; Ford, Wilkerson, Seers, & Moorman, 2014; Seers et al., 1995).

The consequence that has significant implications for the present research project is the TMX agreement on safety climate. Ford and Seers (2006) studied group agreement on climate. TMX differentiation (i.e., variability), TMX receipts (i.e., effort received from the group) and TMX contributions (i.e., effort put forth to the group), study results identified average high quality LMX and TMX relationships predicted within-group agreement on some measures of climate (Ford & Seers, 2006; Ford et al., 2014). Furthermore, results showed that TMX differentiation may have negative effects on within-group agreement on climate. By examining acute care nurses' perceptions of LMX and TMX, this study will expand our understandings of factors that contribute to safety climate.

Safety Climate

Describing the safety climate in hospitals is an important first step in the development of work environments where patient safety is consistently recognized and enacted upon as a high priority (Leonard, Graham, & Bonacum, 2004). Key components of a positive patient safety climate include strong leadership commitment to patient safety, open discussion of errors, and an inherent ability to learn from mistakes (Leonard et al., 2004**)**. Most knowledge concerning safety climate comes from manufacturing, industrial, and heavy industry work settings where this issue was first studied (Zohar, 1980).

There has been considerable discussion regarding the definition of safety climate. Definitions of safety climate commonly refer to employees' perceptions of the work environments related to safety (Barling, Loughlin, & Kelloway, 2002; Flin, 2007; Zohar, 1980). These perceptions reflect the priority that employees believe the organization gives to safety

issues in relation to other organizational concerns. Employee perceptions inform behavioral expectations and provide the momentum for their actions, thus impacting organizational outcomes such as patient satisfaction or decreased adverse events (Zohar, 2003).

Increasingly, the value of cultivating a climate of safety within healthcare organizations has been recognized as a necessary strategy for improving the safety of both patients, as well as their healthcare providers (Leonard et al., 2004; McCaughey et al., 2013). A growing body of peer-reviewed studies demonstrated the importance of safety culture since the publication of the Institute of Medicine's (IOM) (2000) landmark *To Err is Human* report. Quality and safety often are described within healthcare in terms of patient safety and experience. Four factors consistently associated with the development of a strong safety climate include: (a) managers are perceived by staff as strongly committed to patient safety (Mark, Hughes, Belyea, Bacon, Chang, & Jones, 2008; Naveh et al., 2005), (b) worker productivity and employee safety are balanced (DeJoy, Schaffer, Wilson, Vandenberg, & Butts, 2004; Mark et al. 2007), (c) the workplace incorporates positive information flow about safety (Mark, et al, 2008; Naveh, et al., 2005), and (d) the organizational culture supports a constructive response to unsafe events or errors which values learning from errors versus a punitive climate (DeJoy et al., 2004).

A systematic review of 20 studies identified positive linkages between leadership, organizational climate, nursing, and patient outcomes (MacDavitt, Chou, & Stone, 2007). All studies were cross-sectional in design and samples ranged from 632 clinicians in three hospitals to 250,000 providers in 168 hospitals. Response rates ranged from 40% to 86%. Twelve of the studies examined aspects of climate and patient outcomes. Aiken, Clarke, and Sloane (2002) identified that leadership was associated with the nurses' perceived quality of care. Nurses who perceived leadership support as low were twice as likely to perceive quality of care on their units

as fair to poor. Unit leadership and follower interaction were significantly associated with higher perceived quality of care (Shortell et al., 1994). Leaders who focused on safety climate and sharing safety information to provide congruence with employee perceptions were associated with minimized errors and higher rates of treatment error reports (Naveh et al., 2005; Sochalski, 2004). This information flow concerning safety and constructive feedback to unsafe events or errors supports learning from errors versus a punitive climate. However, Stone et al. (2007) question the effects of nurse leadership and nurse follower interaction and were not able to link these variables to patient outcomes.

Nembhard and Edmondsonn (2006) conducted a survey of 1440 health care professionals with a 46% response rate from 23 neonatal intensive care units in the United States and Canada. The study reviewed healthcare workers' perceptions of psychological safety, leader inclusiveness, and engagement in quality improvement work. Leadership behavior was identified as having the capability of overcoming barriers and promoting follower engagement to achieve outcome improvements.

Hofmann and Mark (2006) focused on a broad conceptualization of safety climate in their correlational study of 1127 nurses from 81 medical-surgical units in 42 randomly selected acute care hospitals throughout the United States. Findings from this study suggested that the overall positive safety climate of the unit significantly predicted less medication errors ($B = -1.51$, $p < 0.05$), less hospital acquired urinary tract infections ($B = -1.27$, $p < 0.05$), higher patient satisfaction ($B = 0.27$, $p < 0.01$), and higher perceptions of nurse responsiveness ($B = 0.33$, $p < 0.01$). Hofmann and Mark (2006) highlight that a positive safety climate is a necessity as patient needs become more complex.

Vogus and Sutcliffe (2007) conducted a study of 1,685 registered nurses from 125 nursing units examining the association of safety climate with reported medication errors and patient falls. Findings revealed that theorized antecedents of trust and commitment were positively related to safety climate (B = .164 and .295 respectively, $p < 0.001$) and safety climate was negatively related to medication errors (B = -.69, $p < 0.001$) and falls (B = -0.63, $p < 0.001$). The findings of this study support the role of safety climate in reducing adverse patient events.

Huang et al. (2007) conducted a cross sectional survey to determine if safety culture factors varied across four intensive care units (ICUs) in one tertiary care hospital. The study achieved a 70.2% response rate from the health care personnel and assessed six factors: job satisfaction, stress recognition, perceptions of management, teamwork climate, safety climate, and working conditions. Results indicated there was significant safety culture variation across the ICUs of a single hospital. Furthermore, ICU nursing directors tended to overestimate their personnel's attitudes, particularly for teamwork consistent with a recent study that found ICU managers perceived a more positive safety climate than other staff (Kho et al., 2005). As safety climate varied significantly within the ICUs of the same institution, Huang et al. (2007) recommended that safety culture be assessed at the unit level, rather than the hospital level. Furthermore, units with high levels of safety culture promotion could be identified and serve as exemplars and guide other units within the hospital which are lacking in safety culture (Huang et al., 2007).

Two research studies linked LMX and safety climate (Squires et al., 2010; Thompson et al., 2011). Squires et al. (2010) used a cross sectional survey with 600 acute care nurses and attained a 49.4% response rate. Squires et al. (2010) reported that LMX was positively correlated with nurses' perceptions of the work environment and safety climate. Large effect sizes were attained between: resonant leadership and leader–nurse relationship, nurse leader–

nurse relationship and safety climate, work environment and safety climate and work environment and emotional exhaustion. The study contends the importance of nursing leaders' relationships with nursing staff in fostering quality work environment and positive safety climate that potentially improve nurse and patient outcomes. Thompson et al. (2011) undertook a unit-level analysis of staff perceptions of safety climate within the same institution characterized by low and high LMX scores using cross-sectional data from 34 unit directors and their staff and attained a 41% response rate. Positive relationships were found between all safety climate dimensions and individual LMX scores nested within the units (p <.0001), indicating that high quality relationships were associated with positive staff perceptions of safety behaviors. Findings suggest that nurse leaders with higher quality relationships may potentially affect patient safety. Of particular interest were the different types of patient care units and the varying results of LMX suggesting that outcomes are more directly influenced by the leadership behavior. Leaders with high relational scores can become mentors for lower scoring units as well as become innovators and demonstrators for patient safety (Thompson et al., 2011).

The literature review has identified a lack of research regarding LMX and a dearth of information linking TMX with SC within health care. The present study focused on the quality of LMX between nurse leader and nurse followers, the quality of the relationship between acute care nurses and their health care team and particularly addressed if there is a correlation with perceived safety climate. This study added important information about key variables associated with perceived SC.

Chapter Summary

In this chapter, a review of the current evidence about leadership, LMX, TMX, and SC was provided. As LMX continues to be tested within healthcare, the evidence generated regarding relational leadership and SC are limited, but encouraging. Health care work environments are complex entities. The necessity of 24 hour, 7 days per week provision of care, as well as the increased acuity and volume of patients have the potential to lead to dysfunctional work systems that may lead to adverse events for leaders, followers, and most importantly, patients. As leaders influence safety climate using multiple techniques or factors, the literature supports the notion that LMX would have a strong association with SC (Squires et al, 2010; Thompson et al., 2011). Given the importance of safety and the potential harm from errors within health care, it is critical that a clearer picture emerges on the nurse leadership and nurse follower relationship in regards to how the approach and orientation to safety climate within a health care unit can influence important organizational outcomes. A critical review of theoretical and research literature demonstrates that through high quality relationships with their staff, nurse leaders can create supportive and safe work environments by using relational leadership. Therefore, an adapted leadership process model was an appropriate guide to develop a greater understanding of nurse leadership and nurse follower relationships and the role these relationships may have in influencing SC.

Another factor that may contribute to diminished SC and problematic work environments is nurses 'relationships' with members of the health care team. In this review, few studies about TMX and SC in hospitals were located. Because of the limited evidence about the association between TMX and SC in health care, it is difficult to determine the strength or direction of this relationship at this time. For this reason, a study is warranted that examines acute care nurses'

perceptions of LMX, TMX, and SC. Factors associated with high and low levels of SC must be clearly identified.

CHAPTER III: METHODOLOGY

This chapter will describe the methods and procedures used to explore the relationship between staff nurses' perceived relational leadership (quality of nurse leader-nurse follower relationships) through LMX, nurses' perceived quality of the working relationship of the health care team through TMX, and perceived safety climate in acute care units in a community-based hospital located in a western Canadian city. The design, setting and sample will be discussed. Data collection procedures are outlined with a review of the chosen measurement tools. Lastly, the plan for data analysis and ethical considerations are presented.

Research Design

This study employed a non-experimental, cross-sectional survey design to explore the relationship between staff nurses' perceived leader-member exchange (LMX), team member exchange (TMX), and SC. These scales measured the individual staff nurse's perception of LMX, TMX, and safety climate. Specifically, these scales measured the quality of the nurse leader - nurse follower relationship, nurses' perceived quality of the health care team relationship, as well as their perception of safety climate on the acute care unit of the participating, community hospital.

The Setting

The setting for the study was a community based acute care hospital located in a western Canadian city. The acute care clinical areas (medicine, surgery, critical care, emergency, and operating room units) were selected because they are settings that researchers have identified as high risk for preventable injuries associated with safety concerns (IOM, 2000; 2001).

The Sample

The convenience sample was recruited from the target population of acute care nurses on the participating units of the community hospital; LPNs and RNs, who work part-time or full-time in medicine, surgery, critical care, emergency, and operating room units were invited to complete a survey package comprised of four scales. RNs and LPNs, henceforth described collectively as nurses, represent the largest group of health care providers within hospitals and are the professional groups that have 24 hour contact with patients. The sample included only staff nurses who indicated their willingness to participate in the research by filling out the anonymous survey package.

Inclusion and Exclusion Criteria

Inclusion criteria were as follows: registered nurses (RNs) and licensed practical nurses (LPNs) who provide direct patient care, employed in either a full time or part time position, work in one of the clinical units identified, and have worked with the current manager for at least three months. Exclusion criteria were any registered psychiatric nurses, as they do not practice in an acute care medical/surgical setting and casual and float pool nurses as they do not consistently work on a specific unit and may not develop a relationship with a direct nurse manager.

Data Collection Instruments

The survey package was composed of four, self-report, paper-pencil scales: Demographic Questionnaire, Leader Member Exchange (LMX) Questionnaire (Graen & Uhl-Bien, 1995), Team Member Exchange (TMX) Questionnaire (Ford &Seers, 2006), and Safety Climate Survey (SCSu) (Sexton & Thomas, 2003) as titled by the respective authors. For the purposes of this thesis, these scales when grouped together will be referred to as a survey package. Each

instrument will be referred to as a scale for the purpose of consistency. Please see Appendices A, B, C, and D respectively.

Demographic Questionnaire

The Demographic Questionnaire was developed to elicit the personal factors that described the sample, as well as to identify and explore nurses' demographic variables and their relationships or associations with LMX, TMX, and SC. Demographic variables included categorical variables: age and time range (months/years) with current direct supervisor/nurse manager, gender, initial nurse preparation (LPN, RN, Baccalaureate-prepared nurse), additional education achievements following initial nurse preparation, and employment status (full-time or part-time) (see Appendix A).

LMX-7

The *Leader-Member Exchange (LMX 7)* is a seven-item scale utilized to measure the quality of the relationship with either the leader or one of the followers (Graen & Uhl-Bien, 1995). The perceived quality of nurse leader/clinical nurse relationships were measured using the LMX 7 (Graen & Uhl-Bien, 1995). This widely used scale (Schriesheim et al., 1999; Han & Jekel, 2011; Squires et al., 2010; Thompson et al., 2011) consists of seven items that describe and measure the overall quality of nurse relationship with the direct supervisor. The scale uses the follower as the referent to assess the quality of the relationship from his/her perspective by rating the seven items using a 5-point Likert scale ranging from a low level (1) to a high level (5). The scoring reflects the perceived quality of the relationship along a continuum within the following ranges: very low = 7-14, low = 15-19, moderate = 20-24, high = 25-29, and very high = 30-35 (Graen & Uhl-Bien, 1995). The total score is obtained by summing responses to each of the 7 items. The theoretical range for the total score of the scale is 7 to 35 (see Appendix B).

There are several LMX instruments used to measure the perceived quality of the leader/member relationship from 2-item to 14-item scales. However, Schriesheim et al. (1999) meta-analysis across 79 studies, which compared instruments and aggregated reliability results, found the LMX 7 provided the soundest psychometric properties of all available LMX measures. The mean reliability coefficient for the LMX 7 (0.89) was reported higher than the mean reliability coefficient of all the other LMX tools. Schriesheim et al. (1999) recommended that the LMX 7 be used in studies that examine overall leader/member exchange quality. They also suggested that LMX is best measured from a member's perspective as opposed to the leader's perspective. Graen and Scandura (1987) acknowledge that leaders are hesitant to discriminate between lower and higher quality dyads.

In addition, the LMX 7 demonstrates content validity because its "items appropriately capture the three important dimensions of LMX: "trust, respect and obligation" (Graen & Uhl-Bien, 1995, p. 237). The LMX 7 instrument assesses the degree to which the leader and subordinate have mutual respect for the other's capabilities, a sense of reciprocal trust, and a sense of obligation to each other. The high Cronbach's alphas demonstrates the LMX 7 to be a reliable instrument and the high level of internal correlation supports its use in this study to measure the overall quality of relationship between nurse leader and nurse follower.

TMX

The perceived quality of exchange among coworkers or team members will be measured using the *Team Member Exchange* or TMX (Ford & Seers, 2006; Seers, 1989). TMX has been defined as an individual's "perception of his or her exchange relationship with the peer group as a whole" (Seers, 1989, p. 119). Team-member exchange (TMX) was measured using a 12 item scale (Ford & Seers, 2006; Ford et al., 2014). The scale can measure perceived contributions

versus perceived receipts; as well it measures exchange reciprocity (see Appendix C). Participants responded to the first twelve items assessing relationships with team members on a 7-point Likert type scale ranging from 1 (*strongly disagree)* to 7*(strong agree).* The measure included matched items assessing quality of exchange relationships with team members and their reciprocal opposites such as "When other group members are busy, I often volunteer to help them out," and "When I am busy, group members often volunteer to help me out." Test-retest reliability was not obtained in this study and personal communication (July 21, 2014) with A. Seers identified his personal surprise of not including this psychometric assessment in earlier studies which were based upon longitudinal data. However, the scale has exhibited strong internal reliability ($\alpha = .90$) (Ford & Sears, 2006). Valentine, Nembhard and Edmondson (2011) reported that only 13 of 36 teamwork scales were assessed with full psychometric properties. Valentine et al. (2011) found that TMX was lacking inter-rater agreement and reliability and noted that the content validity was based upon earlier work by Seers (1989, 1995).

Safety Climate Survey

Perceived SC was measured using the *Safety Climate Survey* (SCSu) (Sexton et al., 2006; Sexton & Thomas, 2003). The SCSu is a 21-item scale. The scale can measure the acute care nurses perceptions about safety in their clinical area and management's commitment to safety. Sample items include: "The culture of my clinical area makes it easy to learn from the mistakes of others" and "I am encouraged by my colleagues to report any patient concerns I may have". Staff nurses were asked to indicate their agreement to each item on a 5 – point Likert scale ranging from 1 (disagree strongly) to 5 (agree strongly). Negatively worded statements were reversed scored so higher values are indicative of more positive safety climate perceptions. The

total safety climate score was the sum of all 21 items and the theoretical range is from 21 to 105 (see Appendix D).

Researchers have reported strong psychometric assessments for this scale with test-retest reliability ranging from 0.85 to 0.92 and internal consistency reliabilities ranging from 0.75 to 0.88 (Kho et al., 2005; Pronovost & Sexton, 2005). Content validity is evidenced by the endorsement of the Institute for Health Care Improvement (Kho et al., 2005) and the European Network for Patient Safety (EUNetPaS) (2010) which, upon review of the scale, provided support for its use to assess perceived safety climates in hospital environments. Safety actions identified within landmark safety reports as essential to producing positive patient outcomes such as performance feedback, blameless approach to errors, self-reporting, communication, and learning from errors are identified within the SCSu (IOM 2001, IOM 2003, Baker et al., 2004; Jackson, Sarac, & Flin, 2010). The SCSu has been used within Canadian health care studies and is considered a valid and reliable scale (Kho et al., 2005).

Data Collection Procedure

Subject recruitment and data collection began after the proposal received ethical approval from the Education Nursing Research Ethics Board (ENREB), University of Manitoba, and written approval from the respective community hospital (see Appendix E). A hard copy, survey package was chosen as this format was recommended when the desired sample consists of respondents with higher educational and literacy levels, and people with an interest in the subject are being surveyed (Hardigan, Succar, & Fleisher, 2012; Shih & Fan, 2007). Please see Appendices A, B, C, and D for tools. Administrators from the participating hospital stipulated that hard copies of the survey packages be delivered to the participating unit managers. This approach was identified as the most appropriate data collection method for their nurse

population. To maximize response rates, a modified Dillman (2007) procedure was used. This methodology included:

1) Initial introductory recruitment email through the hospital intra net system using blind carbon copy (forwarded by human resources) (see Appendix F);
2) The survey packages were delivered via the hospital research center to unit managers;
3) A reminder notice via blind carbon copy email (see Appendix G);
4) A second delivery of the survey packages;
5) A final reminder email to all nursing staff using blind carbon copy (see Appendix H).

The survey packages were sent to the unit managers of the acute care units identified via the hospital research center. The survey package included a cover letter describing the research study, eligibility criteria, contact information, an assurance of anonymity, the four scales, and an addressed return envelope. A personalized cover letter was included with the survey package to describe the purpose and nature of the study, communicating the importance and benefits of participation (McMillan & Schumacher, 2010). The letter further informed participants of the estimated time to complete the four scales, types of items, what the results would be used for, how the results would be reported, how subjects could obtain a summary of the findings, and assurance of anonymity. Additionally, information concerning the contact name and address of the researcher had been supplied. A return envelope was included with each survey package.

A combined reminder/thank you letter was forwarded through inter departmental electronic mail after a two week period. Following another two-week period of having sent the reminder/thank you, the second set of full survey packages was again delivered to the unit managers with a final letter of reminder (Appendix H). Data collection was completed within a six week time period.

Data Analysis Procedure

The primary dependent variable for this study was SC. The individual "raw" questions were ordinal based, which was measured using a Likert-scale. The total score or sum of these questions are used as the outcome and measured at the interval level (Kellar & Kelvin, 2013). The independent variables included the individual nurses' demographics measured at categorical level; while LMX and TMX individual "raw" questions were ordinal based which were measured using a Likert-scale. The total score or sum of these questions were also used as the outcome and measured at the interval level (Kellar & Kelvin, 2013).

Statistical analysis was facilitated by a statistician from the Manitoba Centre for Nursing and Health Research (MCNHR) at the University of Manitoba. All completed scales were amalgamated into an Excel spreadsheet for input to perform statistical coding and analysis by IBM Statistical Package for the Social Sciences (SPSS) version 22.0 and Statistical Analysis System (SAS) version 9.3computer software. Data coding and entry were double checked by a second coder to detect and correct any error prior to analysis. All data were screened for missing data.

SPSS (version 22) was used to conduct descriptive and exploratory statistics (percentages mean, median, and standard deviation) to each study construct measure within the demographic survey scale and LMX, TMX, and SCSu scales as appropriate. SAS (version 9.3) was performed to explore associations between SC dimensions, key demographic variables, LMX, and TMX utilizing regression analysis techniques.

The Kruskal-Wallis H (KW) is a non-parametric test used to compare two or more groups when the data is not normally distributed, sample size is small, there is no homogeneity of variance or the data is ordinal (Kellar & Kelvin, 2013). The independent variable in this test is at

the categorical level such as gender, while the dependent variable must be ordinal or continuous (interval) such as SC (Kellar & Kelvin, 2013).

Spearman's rank correlation coefficient is a nonparametric measure of statistical dependence between two variables which assesses how well the relationship between two variables can be described using a monotonic function and is similar to Pearson correlation coefficient (Kellar & Kelvin, 2013; Lobiondo-Wood& Haber, 2013). This measure was performed to test the relationship between two variables at continuous (interval) levels. For example the Spearman correlation coefficient was used to test the relationship between LMX and SC. Furthermore, this test can be used when the relationship between *x* (independent variable) and *y* (dependent variable) is not linear (Kellar & Kelvin, 2013).

Another test that was performed was regression analysis. According to Hassard (1991), regression analysis provides an informative way to test the possible existence of (and a description of) a relationship between a continuous outcome or dependent variable (such as perceived SC) and explanatory or independent variables (such as LXM and TMX scores). “In many research situations, however, there is very unlikely to be only one explanatory variable that might potentially influence the outcome variable that happens to be of interest to us” (Hassard, 1991, p. 247). Some of the independent variables may have a real effect on the dependent variable; others may have no influence at all on safety climate (Hassard, 1991). The objective of the study was to determine which (if any) of the various independent variables had a genuine relationship with perceived safety climate, to determine the strength and nature of the relationship and to make sense of the “tangle of influences” that may be present when there are a number of possible explanatory variables. This is the role of multiple regression analysis. “Multiple regression is the expansion of correlation to include more than two variables and is

used when the researcher wants to determine what variables contribute to the explanation of the dependent variable and to what degree" (Lobiodo-Wood & Haber, 2013, p. 372). Regression measures how much more than two independent variables explain the variation in perceived safety climate (Rebar, Gersch, Macnee, & McCabe, 2011).

Using the SAS 9.3, a multivariable regression model was the inferential statistic used. The multivariable regression model was chosen to account for the non-independence of nurses within the same unit and within the same hospital. Regression analysis was used to predict the value of the dependent variable (*y*) for individuals for whom some information concerning the explanatory variables was available, or in order to estimate the effect of some explanatory variables on the dependent variable (Polit & Beck, 2012). Regression models involve the following variables: independent variables; dependent variable; and unknown parameters.

In this study, the dependent variable was the perceived SC, as measured by SCSu total score. Because previous researchers demonstrated that SC is dependent upon the quality of the relationship between the nurse leader and staff nurse (measured here by LMX7 total score), it was hypothesized that the independent variable with the strongest association with SCSu total scores will be the LMX7 total score (Thompson et al., 2011; Squires et al., 2010). A multiple effects regression model was used to describe the relationship between the dependent variable (perceived SC) and various independent variables by finding the straightest line that best describes the relationship (Hassard, 1991). "The best line, and hence the line used in regression, has the smallest possible error sum of squares and is known as the least squares line or least squares fit" (Hassard, 1991, p. 248). Multiple regression analysis yields a regression equation that relates the outcome variable (safety climate) to all the explanatory variables in the study (Hassard, 1991).

$$y_i = \beta_0 + \beta_1 x_i + \beta_2 x_i^2 + \varepsilon_i,\ i = 1, \ldots, n.$$

The regression equation identified variables significantly associated with the perceived safety climate. These variables may or may not include quality of the relationship between the nurse leader and staff nurse (measured here by LMX7 total score), quality of the team-member exchange relationship (measured here by TMX), age, gender, time in profession, time employed in department, initial educational preparation, and current educational level (measured by demographic questionnaire).

Ethical Considerations

The study adhered to the Tri-Council Policy Statement regarding "Ethical Conduct for Research Involving Humans" (Canadian Institute of Health Research (CIHR), 2010). The nature of the study and subjects' participation were clearly outlined in the Letter of Implied Consent (see *Appendix I*). Subjects were introduced to the study via blind copy electronic mail and then supplied information about the study with the survey questionnaire package.

All potential participants received a complete package informing them of the details of the study and their right to refuse to participate. Participants were also reminded that they could withdraw up until they submitted their survey, as deletion of specific data after that time would be impossible due to the anonymity of the data. Identification of participants was further protected by not naming the participating community-based hospital. Therefore, voluntary participation of the subjects was established and reinforced. Participants were also advised to contact the research team if there were any questions or concerns related to participation in the study. Survey consent was presumed by the returned and completed survey packages from the acute care nurses who participated in the study. Thus, the procedures of the study ensured informed consent.

Only the researcher had access to the completed survey packages. All data, including hard copies and computer files, will be kept for 7 years and then destroyed as per the University of Manitoba's policy and procedure of destroying confidential material after 7 years. The study did not involve any deception of participants; there were no perceived harmful effects of this study.

Knowledge Translation

Benefits of the study relate to the generation of knowledge and the increased understanding of variables associated with safety climate. Identification of key variables associated with safety climate will assist nurse leaders and administrators in efforts to improve relationships with nursing staff to contribute to a safer climate, which ultimately leads to safer patient outcomes. The results of the study will be shared with acute care nurses, nurse managers, and administrators in the community-based hospital via an emailed executive summary and an oral presentation in the facility. Also, the study's findings will be published in a peer-reviewed journal.

Chapter Summary

In summary, the study used a cross-sectional design to explore the relationship between staff nurses' perceptions of the quality of the relationship between the nurse leader and nurse follower, team member exchange quality and safety climate. Measurement tools for leader member exchange, team member exchange, personal demographic factors, and safety climate were chosen to operationalize the key study concepts. Ethical considerations were addressed throughout the procedures. Thus, the study had sound methodology to address the key research hypotheses.

CHAPTER IV: RESULTS

In this chapter, the study findings are presented in several sections. First, the demographic characteristics of the sample are described followed by detailed results related to each of testing the three hypotheses.

The purpose of this study was to describe the acute care nurses' perceptions of LMX and TMX and the association between demographic variables, LMX, and TMX with SC. A descriptive non-experimental cross sectional survey design was employed. Three hypotheses were explored at the individual nurse level:

1) Acute care nurses' perceptions of LMX will be positively associated with their perceptions of SC;
2) Acute care nurses' perceptions of TMX will be positively related to their perceptions of SC;
3) Acute care nurses' LMX scores will be more strongly associated with SC than their TMX scores.

Data for this study were collected over a 6 week period from January 22, 2014 to March 5, 2014. The initial distribution consisted of 498 survey packages to acute care nurses of a community based acute care hospital in western Canada with follow up electronic reminders and further deliveries of survey packages as recommended by Dillman (2007). Three units or 106 participants did not wish to participate and were excluded. Furthermore, 35 survey packages were returned by Canada Post to the researcher with a notation that these potential respondents did not want to participate. For example, one package was returned with a hand-written note stating, "I don't want to complete these surveys." A further 20 respondents were excluded because they failed to meet the inclusion criteria that is did not work with the current manager

for at least 3 months. Of the total 337 potential participants, 105 respondents, who met the inclusion criteria, completed and returned the survey packages (31.1% response rate).

A research assistant from MCNHR transferred the results to an excel spreadsheet and performed the preliminary data cleaning. A statistician from MCNHR completed statistical coding and the statistician and researcher performed an analysis by IBM Statistical Package for the Social Sciences (SPSS) version 22.0 and Statistical Analysis System (SAS) version 9.0.

Data Analysis Procedures

Descriptive analysis (i.e., percentages, means, and standard deviations) was performed for LMX, TMX, Safety Climate scales, and demographic data as appropriate. Because LMX, TMX, and SC data were not normally distributed, non-parametric statistical tests (KW, Spearman's rho) were used (Kellar & Kelvin, 2013). Correlation coefficients were performed between the scales and univariate tests between the demographic variables identified (educational level, gender, experience in position, experience in speciality, experience in organization and age) and the LMX, TMX, and Safety scales were executed.

Kruskal-Wallis test is used to compare medians of several variables; it is the non-parametric equivalent to a one way analysis of variance (ANOVA). The Kruskal-Wallis test was used to compare the continuous but skewed values of the scales between the categories of the demographic variables and LMX, TMX, and SC.

Spearman's rho correlation is used to determine the degree of association between two sets of ranks; it is the nonparametric equivalent of Pearson's Correlation Coefficient (Lobiondo-Wood& Haber, 2013). It is used when the data do not meet the assumptions about normality, homoscedasticity and linearity (Lobiondo-Wood& Haber, 2013). The Spearman's rho correlation coefficient was used to test the relationship between the categories of LMX, TMX and SC.

The level of significance chosen for non-parametric analysis (KW, Spearman's rho) was alpha 0.05, also known as the probability of making a Type 1 error (Kellar & Kelvin, 2013).

Regression analysis is conducted to describe and test the relationship between the dependent variable and linear combinations of three or more independent variables (Lobiondo-Wood& Haber, 2013). Regression analysis does not assume the independent variable has a normal distribution (Hassard, 1991). A multivariable regression model utilizing SC as the outcome or dependent variable and LMX, TMX, and age were used as the predictors or independent variables. Of note one outlier was removed from the regression model (subject 53) as per the statistician.

Sample Demographics

In this section, the demographic characteristics of the sample or in other words, the nurse respondents, are described. Characteristics including gender, age, education, employment status, and nursing experience including years with current manager are described.

Gender and Age

Of the 105 respondents, 89.5% were female and 10.5% were male. Of the 105 nurses who completed the survey, 98 provided their age range. *Table 1* presents the frequency distribution of the responses. These results indicate the ≤34years of age at 25.5%, the 35-44 years of age at 30.6%, and the ≥45 years of age at 43.9%.

Education

Nurses were asked to indicate all educational levels that applied; as well as, the educational level initially acquired to become an acute care nurse. Therefore, nurses may have had more than one qualification (i.e. both a diploma in nursing and a bachelor's degree or specialty certificate). *Table 1* presents the frequency distribution of the responses. Overall the majority (50.5%)

reported they were educated at the baccalaureate level while the remainder (49.5%) were educated at the diploma level. There were no (0%) self-identified LPNs. There were no higher nursing (master or PhD) credentials identified. Only 2 nurses (1.9%) identified as having education in a non-nursing area.

Employment Status

Respondents were asked to indicate their EFT status. *Table 1* presents the frequency distribution of the responses. In this study, 53.3% of the respondents worked part time while 46.7% of the respondents worked full time.

Table 1. *Demographic Characteristics of the Sample of Acute Care Nurses (N=105)*

	Characteristic	**Frequency**	**(%)**
Gender	Male	11	10.5
	Female	94	89.5
Age Group (Years)	18 – 34	25	23.7
	35 – 44	30	28.6
	45 +	43	41
	Missing	7	6.7
Employment Status	Full-Time	49	46.7
	Part-Time	56	53.3
Type & Level of Education	Bachelor of Nursing	53	50.5
	Registered Nurse	52	49.5

Experience

Nurses reported a wide range in regards to the length of time in their positions, in speciality, in organization and with current manager from 3 months to over 21 years (see *Table 2*). Six nurses (5.2%) did not specify the length of their tenure with their current manager.

Table 2. *Distribution of Nursing Experience of the Sample (N=105)*

Type of Experience / Time in Position		Experience in Position	Experience in Specialty	Experience in Organization	Experience with Current Manager
3 – 11 Months	n	3	1	3	3
	%	2.9	1	2.9	3
1 – 2 Years	n	12	9	9	37
	%	11.4	8.6	8.6	37.4
3 – 7 Years	n	41	41	40	55
	%	39	39	38.1	55.6
8 – 12 Years	n	13	17	20	3
	%	12.4	16.2	19	3.0
13 – 20 Years	n	15	17	16	-
	%	14.3	16.2	15.2	-
21 + Years	n	21	20	17	1
	%	20	19	16.2	1
Total	N	105	105	105	99
Missing	n	-	-	-	6

Summary of Sample and Setting Characteristics

In summary, the majority of the respondents were female, middle aged, had a bachelor degree of nursing, and had worked with their current manager for approximately 3-7 years. No respondents identified themselves as LPNs.

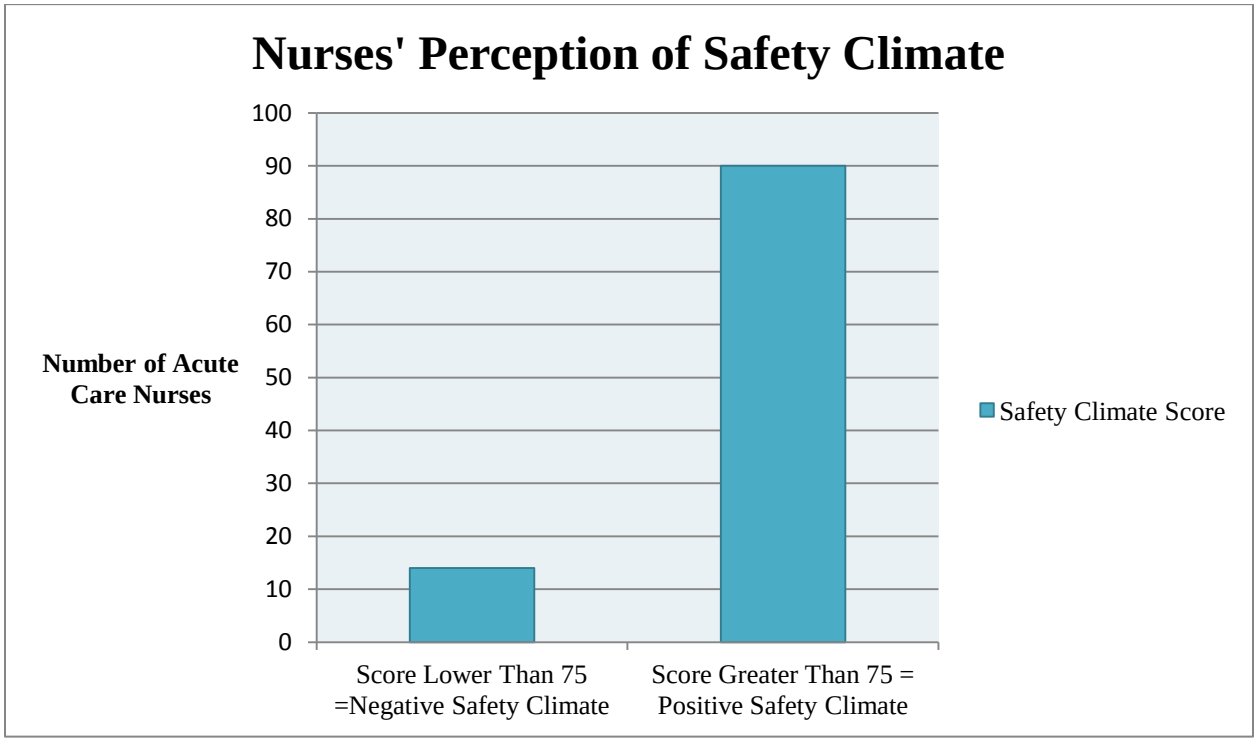
The Dependent Variable: Nurses' Perceptions of Safety Climate

Safety climate perceptions of acute care nurses' were measured using the *Safety Climate Survey* (SCSu), a 21 item scale. Negatively worded statements were reversed scored so higher values are indicative of more positive safety climate perceptions. The total Safety Climate Mean was calculated by firstly assigning a numeric value of 1 to 5 to the response to each of the following questions, 1, 2, 8, 9, 10, 11, and 20, if answered. The total of these questions was then divided by the number of questions answered. If any questions were answered as "Not Applicable" or left blank, they were not included in the denominator. Therefore, the result of the Safety Climate Mean for the acute care nurse follower was between 1 and 5.

The total SC score per respondent was calculated by taking the safety climate mean of the individual survey, subtracting 1 from the mean, multiplying the result by 25 to convert to a 100-point scale. The percent of respondents reporting a positive safety climate was determined by calculating the number of respondents with a safety climate score of 75 or greater then dividing by the total number of respondents. The result was the percent of respondents reporting a positive safety climate.

Findings showed safety climate mean scores for this scale ranged from 2.76 to 5.0 with a mean score of 4.22 (SD = 0.52). After calculation to determine the total safety climate score, a total of 90 respondents or 86.5% were identified as reporting a positive safety climate within their health care facility (*Figure 2*). Cronbach's alpha for SC was 0.88.

Figure 2. *Nurses' Perceptions of Safety Climate within Acute Care Units in a Community Based Hospital (N=105)*



Over 54% of the sample agreed strongly the culture of their clinical area makes it easy to learn from the mistakes of others. Conversely, 46% of the sample identified the need to improve the SC to make it easier to learn from mistakes. As well, 61.9% agreed strongly that medical errors were handled appropriately in their clinical area. Conversely, 38.1% of the sample perceived that medical errors were not handled appropriately. The majority of respondents (90.5%) agreed they would feel safe being treated in their clinical area as a patient. Please see Table 3 for a detailed summary of respondents' perceptions of SC.

Table 3. *Detailed Responses to Safety Climate Tool Questions (N=105)*

	Disagree Strongly		Disagree Slightly		Neutral		Agree Slightly		Agree Strongly		NR		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	N	%
1. The culture of this clinical area makes it easy to learn from the mistakes of others.	2	1.9	0	0.0	9	8.6	37	35.2	57	54.3	0	0.0	105	100.0
2. Medical errors are handled appropriately in this clinical area.	0	0.0	7	6.7	8	7.6	24	22.9	65	61.9	1	1.0	105	100.0
3. The senior leaders in my hospital listen to me and care about my concerns.	16	15.2	14	13.3	27	25.7	30	28.6	16	15.2	2	1.9	105	100.0
4. The physician and nurse leaders in my area listen to me and care about my concerns.	0	0.0	3	2.9	10	9.5	46	43.8	46	43.8	0	0.0	105	100.0
5. Leadership is driving us to be a safety-centered institution.	2	1.9	2	1.9	10	9.5	39	37.1	52	49.5	0	0.0	105	100.0
6. My suggestions about safety would be acted upon if I expressed them to management.	2	1.9	11	10.5	11	10.5	47	44.8	34	32.4	0	0.0	105	100.0
7.Management/Leadership does not knowingly compromise safety concerns for productivity.	2	1.9	6	5.7	10	9.5	55	52.4	31	29.5	1	1.0	105	100.0
8. I am encouraged by my colleagues to report any patient safety concerns I may have.	0	0.0	3	2.9	6	5.7	24	22.9	72	68.6	0	0.0	105	100.0
9. I know the proper channels to direct questions regarding patient safety.	0	0.0	5	4.8	6	5.7	32	30.5	62	59.0	0	0.0	105	100.0
10. I receive appropriate feedback about my performance.	5	4.8	13	12.4	4	3.8	36	34.3	47	44.8	0	0.0	105	100.0
11. I would feel safe being treated here as a patient.	1	1.0	7	6.7	2	1.9	23	21.9	72	68.6	0	0.0	105	100.0
12. Briefing personnel before the start of a	0	0.0	2	1.9	9	8.6	12	11.4	82	78.1	0	0.0	105	100.0

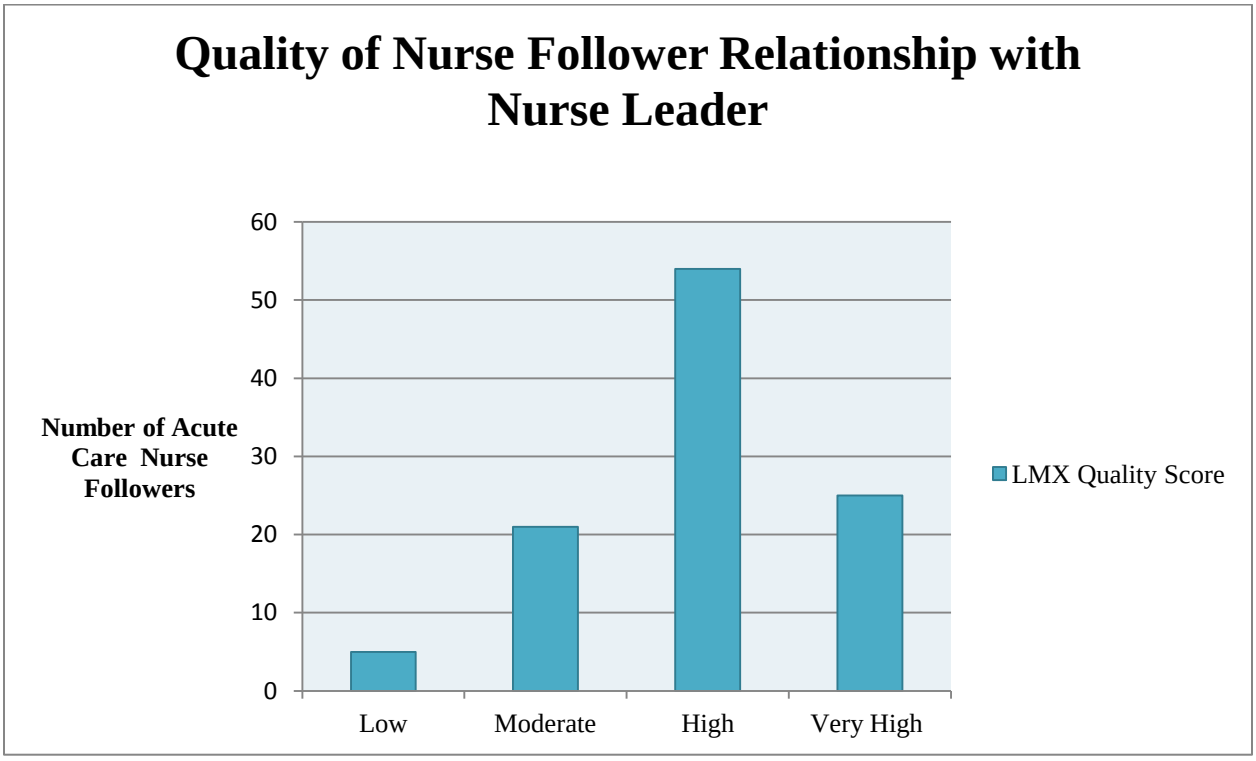
shift (ie to plan for contingencies) is an important part of patient safety.														
13. Briefings are common here.	4	3.8	14	13.3	10	9.5	18	17.1	59	56.2	0	0.0	105	100.0
14. I am satisfied with the availability of clinical Physician leadership.	5	4.8	7	6.7	14	13.3	35	33.3	40	38.1	4	3.8	105	100.0
15. I am satisfied with the availability of clinical Nursing leadership.	1	1.0	9	8.6	5	4.8	34	32.4	56	53.3	0	0.0	105	100.0
16. I am satisfied with the availability of clinical Pharmacy leadership.	0	0.0	6	5.7	18	17.1	28	26.7	33	31.4	20	19.0	105	100.0
17. This institution is doing more for patient safety now, than it did one year ago.	2	1.9	5	4.8	27	25.7	39	37.1	30	28.6	2	1.9	105	100.0
18. I believe that most adverse events occur as a result of multiple system failures, and are not attributable to one individuals actions.	1	1.0	2	1.9	6	5.7	28	26.7	67	63.8	1	1.0	105	100.0
19. The personnel in this clinical area take responsibility for patient safety.	0	0.0	4	3.8	2	1.9	22	21.0	77	73.3	0	0.0	105	100.0
20. Personnel frequently disregard rules or guidelines that are established for this clinical area.	41	39.0	32	30.5	13	12.4	15	14.3	2	1.9	2	1.9	105	100.0
21. Patient safety is constantly reinforces as the priority in this clinical area.	0	0.0	3	2.9	3	2.9	22	21.0	76	72.4	1	1.0	105	100.0

Independent Variable: Nurses' Perceptions of LMX

Clinical nurse leader–nurse follower relationships were measured using the Leader-Member Exchange 7 (LMX7) scale. Of the 105 respondents, there were no identified missing values. Findings indicated the raw total scores for this scale ranged from 15 to 34 with a mean score of 26.93 (SD = 3.86). Cronbach's alpha for LMX was measured at 0.85. To understand the

quality of the relationship between clinical nurse leader and nurse follower, scores were categorized using Graen and Uhl-Bien (1995) guidelines. Relationships are categorized as very low quality when the total scale score is 7 to 14, low if total score is 15 to 19, moderate if total score is 20 to 24, high if score totals 25 to 29, and very high when total LMX7 scale score is 30 to 35.

Figure 3. *Nurse Followers' Perceptions of Quality of Relationship with Nurse Leaders (N=105)*



Over three quarters of respondents (75.2%) perceived they were in high to very high functioning relationships with their nurse leader (Figure 3). Additionally, nurse followers perceived their leader would use their power to help solve problems in their work by a combined high to very high rate of 82.8%. Interestingly, only 40% of respondents reported they felt the nurse leader would bail them out at the leaders' expense. Please see Table 4 for a summary of the respondents' perceptions of LMX.

Table 4*: Detailed Responses of Nurses' Perceptions of Leader Member Exchange (N=105)*

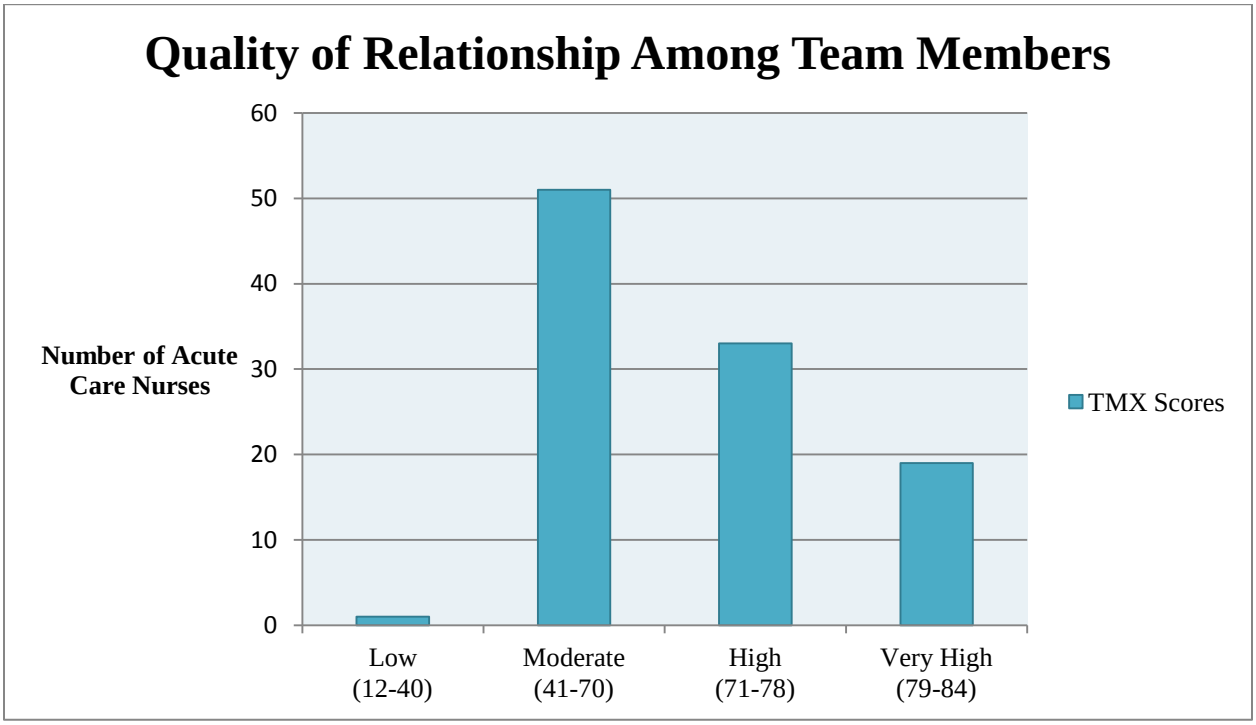
LMX 7 Questionnaire	***n***	**%**
1. Do you know where you stand with your leader. (and) do you usually know how satisfied your leader is with what you do.		
Rarely	**1**	**1**
Occasionally	**4**	**3.8**
Sometimes	**16**	**15.2**
Fairly often	**59**	**56.2**
Very often	**25**	**23.8**
Total	**105**	**100**
2. How well does your leader understand your job problems and needs.		
Not a bit	**0**	**0**
A little	**4**	**3.8**
A fair amount	**14**	**13.3**
Quite a bit	**63**	**60**
A great deal	**24**	**22.9**
Total	**105**	**100**
3. How well does your leader recognize your potential.		
Not at all	**1**	**1**
A little	**0**	**0**
Moderately	**20**	**19**
Mostly	**60**	**57.1**
Fully	**24**	**22.9**
Total	**105**	**100**
4. Regardless of how much formal authority your leader has built into his or her position what are the chances that your leader would use his or her power to help you solve your problems in your work.		
Small	**1**	**1**
Moderate	**17**	**16.2**
High	**54**	**51.4**
Very high	**33**	**31.4**
Total	**105**	**100**
5. Again, regardless of the amount of formal authority your leader has, what are the chances that he or she would bail you out at his or her expense.		
None	**6**	**5.7**
Small	**20**	**19.0**
Moderate	**37**	**35.2**
High	**39**	**37.1**
Very high	**3**	**2.9**
Total	**105**	**100.0**

6. I have enough confidence in my leader that I would defend and justify his or her decision if he or she were not present to do so.		
Strongly disagree	**0**	**0**
Disagree	**2**	**1.9**
Neutral	**26**	**24.8**
Agree	**62**	**59**
Strongly agree	**15**	**14.3**
Total	**105**	**100**
7. How would you characterize your working relationship with your leader.		
Extremely worse than average	**0**	**0**
Worse than average	**2**	**1.9**
Average	**32**	**30.5**
Better than average	**55**	**52.4**
Extremely effective	**16**	**15.2**
Total	**105**	**100**

Independent Variable: Nurses' Perceptions of TMX

Team-member exchange (TMX) was measured using a twelve item scale. One outlier was removed from the data. Acute care nurses (N=104) responded to the first twelve items assessing relationships with team members on a 7-point Likert type scale ranging from 1 (*strongly disagree)* to 7*(strongly agree).* Findings indicated the raw total scores for this scale ranged from 12 to 84 with a mean score of 69.28 (SD = 10.86). Regarding score ranges, the most defensible approach is to use actual obtained distributions. By establishing a high versus low cut-point at the median, separate the top 50% of the scores (for 52 of the 104 respondents) from the bottom half. To get quartiles, split the distribution at the 25th, 50th, and 75th percentiles. Following this protocol, rather than imposing pre-conceived and arbitrary absolute cut-points, ensures prevention of nurses from being above or below average (A. Seers, personal communication, April 24, 2014). A total of 52 respondents or 50% of the sample identified high to very high relationships with their team members with the remainder reporting predominantly a moderate relationship (*Figure 4*).

Figure 4. *Nurses' Perceptions of Quality of Relationship with Team Members (N=104)*



To understand the quality of the relationship between acute care nurse and the team, the scale was further divided to assess perceived contributions versus perceived receipts. Findings indicated the raw total scores for this scale ranged from 6 to 42 with a mean score of 35.711 (SD = 5.72) for contributions and a mean score of 33.57 (SD = 5.784) for receipts. Please see Table 5 for a detailed summary of nurses' perceptions of TMX.

Table 5*: Detailed Responses of Nurses' Perceptions of Team Member Exchange (N=104)*

	Strongly Disagree		Moderately Disagree		Slightly Disagree		Neither agree nor disagree		Slightly Agree		Moderately Agree		Strongly Agree		NR		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	N	%
1. When other members of my team are busy I often volunteer to help them out.	1	1.0	0	0.0	2	1.9	2	1.9	10	9.5	32	30.5	57	54.3	1	1.0	105	100.0
2. When I am busy, other members of my team often volunteer to help me out.	1	1.0	2	1.9	6	5.7	3	2.9	38	36.2	32	30.5	22	21.0	1	1.0	105	100.0
3. I frequently take actions that make things easier for other members of my team.	1	1.0	0	0.0	0	0.0	8	7.6	12	11.4	46	43.8	37	35.2	1	1.0	105	100.0
4. Other members of my team frequently take actions to make things easier for me	1	1.0	0	0.0	4	3.8	10	9.5	40	38.1	31	29.5	18	17.1	1	1.0	105	100.0
5. I frequently recognize the efforts of other members of my team.	1	1.0	0	0.0	0	0.0	5	4.8	15	14.3	43	41.0	40	38.1	1	1.0	105	100.0
6. Other members of my team frequently recognize my efforts.	1	1.0	0	0.0	2	1.9	4	3.8	31	29.5	30	28.6	36	34.3	1	1.0	105	100.0
7. I communicate openly with other members of my team about what I expect from them.	1	1.0	0	0.0	6	5.7	10	9.5	22	21.0	37	35.2	28	26.7	1	1.0	105	100.0
8. Other members of my team communicate openly with me about what they expect from me.	1	1.0	0	0.0	6	5.7	13	12.4	28	26.7	40	38.1	16	15.2	1	1.0	105	100.0
9. I frequently provide support and encouragement to other members of my team.	1	1.0	1	1.0	1	1.0	8	7.6	14	13.3	40	38.1	39	37.1	1	1.0	105	100.0
10. Other members of my team frequently provide support and encouragement to me.	1	1.0	0	0.0	3	2.9	9	8.6	17	16.2	45	42.9	29	27.6	1	1.0	105	100.0
11. I frequently suggest ideas that other members of my team can use.	1	1.0	2	1.9	3	2.9	9	8.6	20	19.0	45	42.9	24	22.9	1	1.0	105	100.0
12. Other members of my team frequently suggest ideas that I can use.	1	1.0	0	0.0	5	4.8	11	10.5	28	26.7	35	33.3	24	22.9	1	1.0	105	100.0

Inferential Analysis of Demographic Variables and LMX, TMX, and SC

Kruskal-Wallis H tests were performed to determine relationships between independent categorical variables such as education, gender, age and years of experience with respect to the dependent interval variables of LMX, TMX, and SC perceptions (Kellar & Kelvin, 2013). Only age, which presented a Chi-Square = 11.587, df = 3, and *p* value = 0.0089, was statistically significant in its association with LMX. Compared to nurses of 34 years and younger, nurses over 34 years of age were more likely to have higher perceived quality of relationship with their nurse leader based upon their LMX scores. However, age with a Chi-Square = 3.797, df = 3, and *p* = 0.078 had no statistical significance with TMX but may be considered by some to have borderline significance. Additionally, age with a Chi-square = 13.165, df = 3, and *p* value = 0.004 was statistically significant in its association with SC. Hence, age was incorporated into the regression model, discussed under Hypothesis 3, to determine whether it could account for the variance related to SC.

Results of Testing the Hypotheses

The following is a detailed summary of the statistical analysis for each of the three hypotheses:

Hypothesis # 1

1. At the individual nurse follower level, acute care nurses' perceptions of LMX will be positively associated with their perceptions of SC.

This hypothesis was addressed by asking respondents to rate their overall clinical nurse leader-nurse relationship. Additionally, respondents were asked to rate their perceptions of safety climate for their workplace. Spearman's rho correlation was used to determine the degree

of association between two sets of ranks LMX and SC as the data did not meet the assumptions about normality.

The first hypothesis was supported. Correlations of the LMX and SC identify a positive relationship between overall LMX and overall SC, r = 0.641, p <.0001. Results of significant variables are found in Table 6.

Hypothesis # 2

2. At the individual nurse follower level, acute care nurses' perceptions of TMX will be positively related to their perceptions of SC;

This hypothesis was addressed by asking respondents to rate their overall perceived quality of exchange among coworkers or team members using the *Team Member Exchange* or TMX. Additionally, respondents were asked to rate their perception of safety climate for their workplace. Spearman's rho correlation was used to determine the degree of association between two sets of ranks TMX and SC as the data did not meet the assumptions about normality.

The second hypothesis was supported. Correlations of the TMX and SC identify a positive relationship between overall TMX and overall SC at r = 0.7050, p < .0001. Results of significant variables are found in Table 6.

Table 6. *LMX, TMX and Safety Climate Correlation (N = 104)*

Variable	**Safety Climate**
	Correlation Coefficient (r)
LMX	0.64114*
TMX	0.70496*

Note: Frequency missing = 1; *p < .0001

Hypothesis # 3

3. At the individual nurse follower level, acute care nurses' LMX scores will be more strongly associated with SC than their TMX scores.

This hypothesis was tested and rejected by the use of univariate and regression models. Spearman rho correlation identified LMX and SC had a positive relationship at r=0.641, $p<.0001$, while correlations of the TMX and SC identify a positive relationship at r=0.7050, $p<.0001$. Multivariable regression models were used to describe and test the relationship between the dependent variable (i.e., SC) and a linear combination of several independent variables (i.e., LMX, TMX, and age). Specifically, the regression model was used to compare LMX and TMX adjusted correlations and to quantify the percent of variance explained of SC via LMX, TMX, and age. Furthermore, LMX, TMX, and age were selected for inclusion in the model based on their univariate significance. Other predictors (education, gender, position experience, speciality experience, and organization experience) were put into this model one at a time to see if they became significant upon adjustment for LMX, TMX, and age. None were significant and thus not included in the final model. Additionally, to assess that model assumptions were not violated residual diagnostics were performed to assess model fit. Residual diagnostics performed included a scatter plot of the residuals against each predictor in the model, Q-Q plot, Cooks distance, and histogram of residuals. The residuals were found to be normally distributed.

LMX and TMX were found to have a statistically significant positive relationship to safety climate, while age approached a positive relationship of statistical significance. The regression model identified 66.83% of the variance outcome for SC was attributable to LMX, TMX, and the acute care nurses' age. Furthermore, with each incremental increase of LMX there is a

corresponding increase of 0.055 of SC. Additionally, each incremental increase of TMX corresponds to an increase of 0.029 SC. Calculation of the squared semi-partial correlations for LMX and TMX revealed that LMX and Safety Climate were correlated at 0.128, whereas TMX and SC were correlated at 0.191. Therefore, TMX had a higher correlation with SC than LMX when they were mutually adjusted for one another and for age. Both the univariate and regression models identified a slightly stronger correlation of TMX as opposed to LMX towards SC. Results of significant variables are found in Table 6 and Table 7.

Table 7*: Multiple Regression Model for Perceived Safety Climate of Acute Care Nurses, Regressed on Five Predictor Variables (N = 104)*

PREDICTOR VARIABLES	*B*	SE	*p* – Value
Intercept	0.716	0.277	0.011
LMX[a]	0.056	0.010	< .0001
TMX[b]	0.029	0.004	< .0001
Age 30 to 34[c]	- .327	0.134	0.017
Age 35 to 44[c]	0.041	0.097	0.676
Age 45 or over[c]	0.005	0.093	0.960
Age less than 30[c]	0.0000 Reference		

*p < .0001 Notes: $R^2 = 0.668$, **
[a]Higher scores on the LMX reflect a greater perceived functioning relationship to nurse leader
[b]Higher scores on the TMX reflect a greater perceived quality of exchange among team members
[c]Age is given in ranges, and treated as a categorical variable in the model

Means

SC27 – Range in age in years	Safety Climate LSMean	LSMean Number
30 – 34	3.9129	1
35 – 44	4.2808	2
45 +	4.2447	3
< 30	4.2400	4

P – Values ; Dependent Variable: Safety Climate				
i/j	**1**	**2**	**3**	**4**
1		0.0038	0.0072	0.0165
2	0.0038		0.6309	0.6759
3	0.0072	0.6309		0.9602
4	0.0165	0.6759	0.9602	

Chapter Summary

This chapter presented the results that determined acute care nurses' perceptions of LMX, TMX and SC the association between key demographic variables to LMX, TMX, and SC. Descriptive statistics were used to summarize the demographic data. Non-parametric and parametric statistical tests were performed to address the hypotheses.

Kruskall Wallis statistics were used to assess and compare groups between education, gender, position experience, specialty experience, organization experience, and age and LMX, TMX, and Safety climate perceptions. Age was the only demographic variable with statistically significant positive associations to LMX and SC.

The relationship between TMX, LMX and SC was explored through Spearman's rho correlation coefficients. LMX and TMX were found to have statistically significant relationships with SC. Lastly, regression analysis was used to explore the strongest relationship identified with SC. Leader-member exchange and TMX were both statistically significant; however, TMX had a slightly stronger relationship to SC. Thus, LMX and TMX independently were related to SC. A regression analysis determined that approximately two-thirds of the variance of SC could be explained by age, LMX, and TMX. The following chapter will provide discussion of the research results.

CHAPTER V: DISCUSSION

This chapter includes a discussion of the research study findings, based on the results presented in Chapter Four. Leadership has been examined from many aspects including characteristics, traits, behaviors, and style (Northouse, 2010). Within this study, an aspect of leadership that other industries have examined extensively but under examined in health care involves the relational perspective termed leader member exchange (LMX). Leader Member Exchange was the guiding framework for this study. This perspective is grounded in social exchange theory and well supported theoretically and empirically (Dulebohn et al., 2012; Graen & Uhl-Bein, 1995; Ilies et al., 2007). Although this perspective has had limited application within healthcare (Squires et al., 2010: Thompson et al., 2011), this study compared staff perceptions of safety climate at the individual nurse follower level within the same institution characterized by low to high LMX and low to high TMX scores.

The primary objective of this chapter is to discuss the results and how they relate to acute care nurses' perceptions of safety climate at the individual nurse follower level characterized by low and high ratings of LMX (quality of nurse manager-clinical nurse follower relationships) and TMX (quality of exchange relationships among health care teams). To this end, the study results will be discussed within the context of relevant literature and organized within the study's three main constructs: LMX, TMX, and SC.

Hypothesis 1 tested whether, at the individual nurse follower level, acute care nurses' perceptions of LMX would be positively related to their perceptions of SC. Data illustrated that LMX had a positive relation to SC. Hypothesis 2 tested whether at the individual nurse follower level, acute care nurses' perceptions of TMX would be positively related to their perceptions of SC. Data illustrated that TMX had a positive relation to SC. Hypothesis 3 tested whether at the

individual nurse follower level, acute care nurses' LMX scores would be more strongly associated with SC than their TMX scores. The data did not support Hypothesis 3; the TMX has a slightly higher correlation with SC than LMX when the variables are mutually adjusted for one another and for age. Both the univariate and regression models identified a slightly stronger correlation between TMX (not LMX) and SC.

In summary, mixed support was found for the predicted hypotheses. However, data were explored further to identify variables that may correlate with SC. The present research does provide important empirical insights and lays the groundwork for future research. Based on the review of the extant literature the current study is the first to explore and combine LMX and TMX to SC in health care. The use of TMX to evaluate the level of receipts and contributions is, potentially, a valuable theoretical and practical addition to the literature and is relevant to nurse managers. Furthermore, the present study builds on the theory and research offered by Seers and colleagues and extends TMX to a new domain of SC in health care (Ford & Seers, 2006; Seers, 1989; Ford et al., 2014).

The findings of this study are important to administrators and suggest that nurse managers need to partner with nurses to deliver safe patient care and accomplish organizational goals. The presence of strong leadership that incorporates leader member exchange, team member exchange, and the variable of nurses' age can facilitate the attainment of a positive SC and to ultimate positive patient outcomes.

A critique of the suitability of the LMX theory as a framework will be discussed; study limitations will also be highlighted. Implications and recommendations for nursing practice/administration, education, and research are presented, followed by the study conclusion.

Demographic Results

This section will focus on a discussion of the study results and the associated literature related to demographic variables and clinical expertise. Kruskal-Wallis tests and Spearman's rank correlation were used to determine the association between all measured demographic variables, LMX, TMX, and SC.

The demographic information in this study was included to provide an overall description of the study respondents. Demographic statistics for Manitoba nurses were limited (College of Registered Nurses of Manitoba (CRNM), 2012); therefore, Canadian Nurse Association (CNA) (2010) workforce profiles and Canadian Institute for Health Information (CIHI) (2011) Canadian trends were used to compare this sample of respondents to national nurses. This comparison provides insight into the representativeness of the sample to the study population of acute care nurses. The proportion of female to male nurses in this study was slightly different to the national average. The study had more male RNs (CIHI, 2011) with respect to age compared to national nurses. Differences from the national average identified the number of nurses within the ≤ 34 age group increased by 5.6%, within the 35-44 age groups an increase of 4.2% which corresponded to an overall decrease of the number of nurses in the ≥45 age group of 9.8% (CNA, 2010). However, the average Canadian RN is 45 years and is comparable to the study sample (CIHI, 2011).

Education level amongst the study respondents identified a majority (50.5%) with a bachelor degree versus diploma (49.5%) as the highest education. There were no identified LPNs thus not allowing the researcher to compare to national average. Specifically, degree/diploma nurses may have chosen to respond to the study because their nursing program content included research courses; whereas, research courses are not part of the LPN program.

As a result, the degree/diploma nurses may have more knowledge regarding the importance of research in nursing and how this may impact their workplace and work habits, thus leading to an increased inclination to participate in the survey. Furthermore, LPNs traditionally have not held leadership roles such as charge nurse and in their scope of practice, they are responsible for direct patient care. Until recently, LPNs were directed in their care by RNs. Therefore, LPNs may not perceive that their voice is welcome in decision-making processes or research about the organizational climate. Currently, the scope of LPN practice within Manitoba has expanded and LPNs have been offered equivalency with RNs within their technical abilities.

Employment status between the study respondents and the national average was also reversed. Approximately 53% of the respondents were part-time compared to 47% full-time nationally (CIHI, 2011). The difference identified may be due to non-probability sampling such that more part-time staff completed the questionnaire than did full-time.

Nurses reported a wide time range of nursing experience in position, organization, and with current manager. Ranges varied from 3 months to 21 years within the same institution.

Age was the only demographic variable that was identified to be statistically significant in its association with LMX and SC. Furthermore, age was the sole demographic variable within the regression model. This study suggests the potential impact of age differences in the workplace and how maturity may impact perceptions of SC. One may assume that maturity is linked to emotional intelligence and self-efficacy or that maturity of the nurse reflects the nurse's seniority level. However, this study did not measure emotional intelligence, self-efficacy, or seniority. Previous research has identified younger staff express lower job satisfaction, less confidence in management, report concerns about the resolution of disagreements, lack of adequate information, and the discussion of errors (Holden, Watts, & Walker, 2009).

Additionally, significant differences existed among total safety scores based upon age with staff members younger than 31 years scoring lower on the overall safety score (Holden et al., 2009). As nurses mature and become more confident, their ability to interact effectively with others also improves (Chen, Wang, Chang, & Hu, 2008). Nonetheless, maturity and a nurse's ability to reflect and challenge preconceived notions are paramount to achieving a positive safety climate and positive patient outcomes (Holden et al., 2009; Laschinger, Purdy, & Almost, 2007).

Nurse Leader-Nurse Follower Relationships

This section will focus on a discussion of the study results and the associated literature related to clinical nurse leader-nurse follower relationships. The LMX perspective can be used to identify differences in perceptions among nurse followers. Nurses in this study reported a wide range of perceived quality relationships with their immediate nurse leader. Spearman rho correlation showed a positive association between LMX and SC. These study results support aspects of published LMX literature (Squires et al., 2010: Thompson et al., 2011; Wong & Cummings, 2007).

In the current study, nurse leader and nurse follower relationships were measured using the LMX 7 scale. Clinical nurse followers (75.2%) perceived they were in very high to high functioning relationships with the leader. Additionally, nurse followers perceived their leader would use their power to help solve problems in their work by a combined very high to high rate of 82.8%. This finding supports one of the underlying premises of LMX theory; that high quality LMX relationship is based upon trust, respect, and mutual obligation which would not be present if a leader did not recognize performance and clarify expectations (Dulebohn et al., 2011; Graen & Uhl-Bien, 1995; Uhl-Bien, 2006). Furthermore, the relational leader, when developing constructive relationships with staff, produces direct impact upon outcomes for patients and

health care providers (Cummings et al., 2010; Wong & Cummings, 2007). Acute care nurse work environments can, at times, be unpredictable and unsafe. An acute care unit can become unsettling and unpredictable when patients deteriorate due to worsening medical or surgical conditions. If there is a potential for escalation in the patient's condition, acute care nurses are responsible for urgent and decisive decision making in order to deal with the potentially critical situation. During these occurrences, there is a strong emphasis on ensuring the safety of patients and other team members.

The findings identified that acute nurses perceived their nurse leader to understand their job problems and needs "quite a bit to a great deal at 82.9%". An important implication of the leader member exchange theory is that the quality of the relationship between the leader and each group member has important job consequences. Specifically, the research supporting the LMX theory indicates that followers with in - group status with their leaders will have higher productivity and job satisfaction, improved motivation, and engage in more citizenship behaviors at work (Ilies et al., 2007; Chen, Lam, & Zhong, 2007). Leaders are known to invest more resources in those they expect to perform well; as well as, treat them differently than they do out - group members (Uhl-Bien, 2006). Therefore, it is suggested that leaders within this study had developed high - quality relationships with their followers; thus, contributing to followers feeling empowered to contribute meaningfully to workplace decisions (Laschinger et al., 2007).

Influence of Clinical Nurse Leader-Nurse Follower Relationships on Safety Climate

Nurses' attitudes, behaviors, and actions are often referred to as primary components in keeping patients safe (Squires et al., 2010: Thompson et al., 2011). Nurse leaders and, in particular acute care nurses, are influential in creating and maintaining safe patient care

environments and preventing adverse outcomes (Thompson et al., 2011; Wong & Cummings, 2007). Therefore, it is imperative to have an understanding of the relationship between leadership behaviors and SC. Study findings support the hypothesis that acute care nurses' perceptions of LMX will be positively related to their perceptions of SC. Additionally, findings also supported that age was associated with LMX and SC with statistically significant results. Safety climate reflects employees' perceptions of the work environment related to safety and acts as a frame of reference for their behaviors, actions, and attitudes, thus impacting organizational outcomes such as patient satisfaction and decreased adverse events (Clarke, 2006, 2010; Flin, 2007; Zohar, 1980). A significant finding in this study was that over 66% of the SC variance was explained by LMX, TMX, and nurses' age supporting the notion that these elements are critical in quality patient care.

In this research project, LMX factors that influenced a strong safety climate included: 1) leaders committed to patient safety, 2) productivity and safety balance, 3) information flow, and 4) organizational culture.

Leaders Committed to Patient Safety

Relationships developed between leaders and followers are linked to follower outcomes and follower reactions (Dulebohn et al., 2011). Followers perceive their leaders' safety-related activities and methods as strongly committed to patient safety (Flin, 2007; Mark et al., 2008; Naveh et al., 2005; Zohar 2003). These activities and methods reflect the leaders' individual behavior in regard to safety, which lets followers understand the extent to which the leader is committed to safety. To the extent that the leaders' practices are perceived as emphasizing safety, the climate dimension of leader safety practices is high.

In this study, acute care nurses agreed (87.6%) that "physician and nurse leaders in my area listen to me and care about my concerns", while a further 86.6% agreed that "leadership is driving us to be a safety centered institution" (Mark, et al., 2008; Naveh et al., 2005). Similar to other health care studies, high quality relationships were associated with positive staff perceptions of safety behaviors (Squires et al., 2010; Thompson et al., 2011). Findings suggested the nurse leaders with higher quality relationships have the potential to affect patient safety.

Productivity and Safety Balance

Kalisch and Lee (2012) studied overestimation of missed work and underestimation of resources as identified by nurse followers. The study demonstrated that incongruence between leader and follower results in negative outcomes such as worker productivity and employee safety being unbalanced (DeJoy, et al., 2004; Kalisch & Lee, 2012; Mark, et al. 2007). Furthermore, without healthy productivity and safety balance, possible negative outcomes include lower job satisfaction, lower job performance, decreased commitment, less citizenship behavior, and decreased SC (Cummings et al., 2010; Schriesheim et al., 1999; Ilies et al, 2007; Squires et al., 2010; Thompson et al., 2011).

In this study, acute care nurses agreed (81.9%) that management/leadership did not knowingly compromise safety concerns for productivity. An additional 77.2% of respondents believed their suggestions about safety would be acted upon if expressed to management. Nurse leaders who have more positive relationships with their staff encourage work practices that endorse safety protocols; offer educational opportunities; consider staff nurse suggestions for developing or revising safety guidelines; address safety concerns; and, when workload is high, encourage staff not to take shortcuts that would compromise safety. As a result, a leader who is

committed to safety can influence outcomes through actions that balance productivity and safety (DeJoy et al., 2004; Thompson et al., 2011).

Information Flow

Nurse leaders incorporate positive information flow about safety (Mark et al., 2008; Naveh et al., 2005). Constructive feedback from leaders and immediate co-workers creates a non-punitive atmosphere that enhances employee willingness to report safety violations and participate in the identification and resolution of work-related factors that contribute to unsafe behaviors. Study findings identified acute care nurses (94.5%) were encouraged to report any patient safety concern that they may have. However, these nurses had mixed responses regarding senior leadership, 54.2% did not feel they were listened to or their concerns understood and a further 21% of the respondents were seeking more appropriate feedback about their performance. Higher results of reporting suggest that nurse leaders' cultivate an atmosphere of psychological safety and a culture of learning from occurrence reporting to determine what had gone wrong. A culture of safety and learning involves leaders encouraging staff to report errors, support staff who suggest solutions to change, and foster engagement of staff to learn from system breakdowns for patient safety. This suggests that acute care nurses with higher quality relationships and better information flow with their leaders are more likely to feel comfortable to raise safety concerns (positive SC) and engage in safety related citizenship behaviors (i.e., occurrence reporting).

Organizational Culture

The organizational culture supports a constructive response to unsafe events or errors which values learning from errors versus a punitive climate (DeJoy, et al., 2004). Organizational culture includes the administrative mechanisms used to balance coordination with work role

specialization, thus enabling the organization to accomplish its tasks. Administrative mechanisms that support adequate nurse staffing and promote positive work conditions, in particular, are seen as critical components of the organizational culture in acute care hospitals because they affect both quality of care and nurse safety outcomes.

In particular, it was concerning to find that 46% of the sample identified the need to improve the SC to make it easier to learn from mistakes. As well, 38.1% of the sample perceived that medical errors were not handled appropriately. These results point to the need for a blame-free culture to encourage reporting and learning from adverse events.

Interestingly, study findings identified 94% of acute care nurses agreed that personnel in their clinical area took responsibility for patient safety, while a further 93.4% felt patient safety was constantly reinforced as the priority in this clinical area. Research has confirmed if leaders provide a supportive working environment, followers will demonstrate better work attitudes (Chen et al., 2008; Laschinger, Finegan & Shamian, 2001). As a result, organizational effectiveness will improve. Therefore, when followers work well together with leaders, they tend to feel supported and consequently, will contribute additional extra-role behaviors.

Team Relationships and Safety Climate

Patients who receive health care services assume teamwork and team relationships are a prerequisite and assume these to be in place. The task of health care managers, leaders, policy makers, and clinicians is to find methods of implementing the desired working conditions while meeting patient, family, and community expectations. In healthcare, teamwork is the ongoing process of interaction between team members as they work together to provide care to patients. Seers (1989) proposed the construct of TMX to represent the quality of reciprocal exchange among peers within a team. TMX is an adaptation of LMX and represents an individual's

perception of the exchange quality of his or her role relationship interactions with other team members (Seers, 1989). TMX is defined as a team member's perception of the quality of "the reciprocity between a member and his or her team with respect to the member's contribution of ideas, feedback, and assistance to the other members and in turn, the member's receipt of information, help, and recognition from other team members" (Seers et al., 1995, p.21). Thus, TMX represents exchange quality with other team members, not as unique individuals, but in their shared role as team members. Within this study 50% of the sample identified high to very high relationships with their team members with the remainder reporting predominantly a moderate relationship. Given that the mean score for TMX was 69.28, caution with interpretation of the results is recommended. The range of scores was non-normally distributed and within this study, the sample appears to be nearly all strong team players.

Given the importance of quality of TMX relationships for team effectiveness, I argue that it is critical to understand individual team members' perceptions of their exchange relationships with other team members. Interestingly, no research has attempted to link TMX to SC in health care and is a contribution of this study to the literature.

Member's Contribution and Receipt

Teamwork requires a clear decision by the team members to co-operate in meeting shared objectives. In this study, data illustrated that acute care nurses' perceived they contributed greater to the process than to what they received from their fellow team members. Respondents agreed (84.8%) 'When other members of my team are busy I often volunteer to help them out' whereas only 51.5% agreed that 'When I am busy, other members of my team often volunteer to help me out'. This finding was consistent with previous research about TMX (Personal

communication, A Seers, April 23, 2014) and suggests that individuals perceive that they give more to other team members than they receive.

In health care, studies have demonstrated that teamwork can have positive effects, particularly in quality and safety (Oandasan et al., 2006). These positive effects include reducing medical errors, improving quality of patient care, improving patient SC, addressing workload issues, building cohesion and reducing burnout of healthcare professionals (Oandasan et al., 2006). Respondents agreed (79%) 'I frequently take actions that make things easier for other members of my team', while only 46.6% replied 'Other members of my team frequently take actions that make things easier for me'. As evidenced by the results, the acute care nurses in the study believed they offered more to their respective team than what they received.

In this study, data illustrated that at the individual nurse follower level; TMX had a positive relation to SC. Additionally, TMX was found to have a slightly higher correlation with SC than LMX when the variables are mutually adjusted for one another and for age. Both the univariate and regression models identified a slightly stronger correlation of TMX not LMX to SC. By engaging in high-quality TMX, team members received important psychological and socio-emotional resources which may influence the strength of relationship between SC, and work outcomes. Under high-quality TMX, an acute care nurse can receive mutual care, support, and feedback from his or her peers that extend beyond what is necessary for job completion (Liden et al., 2000). In particular, the socio-emotional resources exchanged from the peer members, such as support and recognition, can facilitate the employee effort toward high levels of job performance, SC, and work outcomes (Liden et al., 2000). On the contrary, members under low-quality TMX will limit exchanges to the standard requirement of job completion. Even when the acute care nurse wants to achieve superb performance, he or she is constrained by

less than sufficient help and assistance from peers due to the low level of reciprocity. Indeed, Seers (1989) claimed that employees with high-quality exchange relationship with their team members "enjoy advantages toward meeting performance expectations" (p. 122). Although the link is far from definitive, teamwork and TMX appear to have a correlation to SC in health care. In particular, when an acute care nurse has high quality TMX with the team members, the working relationships between the team members will be close, characterized by support and caring. To maintain the social exchange relationship, nurses will help and assist other team members reciprocally to maintain the support and caring received from the team members. Therefore, when compared with a working relationship under low-quality TMX, high quality TMX provides healthcare institutions more opportunity to observe strong SC.

Study Limitations

The study has several limitations. This study is a descriptive cross-sectional survey design and all measures were collected in one community-based, acute health care hospital in western Canada. As such, all results must be interpreted cautiously as the results cannot state definitively that one variable caused another variable (Lobiondo-Wood & Haber, 2013).

The study used a convenience sample from one community, acute health care hospital; hence, it may not be an exact representation of all acute care nurses in Canada or globally. Despite this limitation, the response rate for this study was adequate (31.1%). All respondents volunteered to participate in the study, and therefore their views may not be representative of those who chose not to participate. However, if a sample is representative of the overall population, as this sample was, a small sample size can provide an accurate picture of the larger population (Lobiondo-Wood & Haber, 2013).

Non-response bias is related to the voluntary nature of the respondents. Non-response bias has the potential to affect survey data by skewing the results of statistical inferences and estimates drawn from the collected data (Lobiondo-Wood & Haber, 2013). Nurses who responded to this study may have perceived leadership, teamwork, and SC differently than those who did not respond. Unfortunately, there is no way to compare characteristics of nurses who responded to characteristics of non-responders. It is not known whether nurses in this study were innately different from nurses who did not agree to participate or who were not randomly selected to participate in the study. It was concerning that no LPNs participated in this study.

Sources of bias include: common rater effects such as social desirability; item characteristic effects such as common scale formats, anchors and item priming effects; and measurement context effects (Lobiondo-Wood & Haber, 2013). Survey responses were anonymous and the researcher was not an employee of the institution; nevertheless, concerns about confidentiality may have influenced the replies. Nurses were informed that there were no right or wrong answers and they could refuse to answer any questions. This information was offered to minimize common rater effects of social desirability or the tendency to respond as a result of social acceptability or demanded by leaders.

Findings must be viewed with caution suggesting the importance to repeat this study using a longitudinal design with the possibilities of a probability sampling technique and a larger sample size. A longitudinal study could be conducted and items measured at different intervals to determine how maturity impacts SC. However, the effect time and turnover of leaders and staff may influence results and limit the ability to measure all the variables across time.

Recommendations for Future Research

Further research is necessary to deepen our knowledge of the relationships between acute care nurses' reported LMX, TMX, and SC and the potential impacts on organizational variables and patient safety and quality. Further research should be conducted to attempt to replicate this study using a larger sample of nurses (with a targeted recruitment of LPNs), nurse managers, and allied health professionals in various health care settings in order to improve the confidence in the findings and their generalizability. In particular, it would be beneficial to explore how the age of the nurse contributes to the particular unit's SC. Furthermore, future studies should obtain nurse manager ratings of LMX, TMX, and SC (it should be noted to fully understand LMX relationships it must be investigated from both leaders' and followers' perspective). This study provides a starting point to conduct further research that can assist health care facilities in bringing change based upon evidence to improve patient safety as well as other organizational initiatives. Additionally, future research linking patient outcomes (satisfaction with care, adverse events) and employee outcomes (turnover, staff satisfaction, work-related injuries) with LMX, TMX, and SC is warranted.

Implications for Nursing Administration

Increasing public consciousness of safety related problems such as adverse events currently encourage administrators to ensure that patients are protected from harm due to treatment and care. Creating a positive SC warrants a broad range of activities to improve and change existing behaviors at all levels of the health care institution. The findings of this study are helpful in providing administration with information regarding perceptions of acute care nurses with respect to LMX, TMX, and SC.

The human elements that define a SC include: leadership, communication, teamwork, staff engagement, group orientation, and reduced hierarchy (Baker et al., 2004; Banks et al., 2014; Dulebohn, et al., 2012; Graen & Uhl-Bien, 1995; Hofmann & Mark, 2006; Laschinger et al., 2007; Sexton et al., 2006). Both LMX and TMX measure the quality of reciprocal exchange among employees and leaders within a workplace. While LMX and TMX are distinct constructs, nurse administrators can determine which individuals establish high quality reciprocal exchanges with leaders and with their team. Both constructs have proven relations with workplace outcomes such as job performance, organizational commitment, job satisfaction, and turnover intentions (Banks et al., 2014). While this study has identified a correlation of these constructs and SC, no direct link between nurses reported SC levels and patient outcomes were addressed. A study which examines this relationship would contribute to an understanding of the relationship between SC and patient outcomes.

Nursing administration accountability is a key factor to support an organizational shift to promote SC. Nurse leaders can drive nurse followers towards cultural improvements by implementing strategies and building team networks that guide safety processes and outcomes (Banks et al., 2014; Davies et al., 2011). Furthermore, nursing administration can enhance and promote an empowered acute care nurse workforce by becoming familiar with the fundamentals of LMX and TMX theory and implementing these elements into the framework that guide patient safety measurement and evaluation of improvements (Graen & Uhl-Bien, 1995; Seers et al., 1995).

The decision by hospital and nurse administrators to survey nurses and other employees regarding their organizations' SC demonstrates that patient safety and quality of care are high priorities. Furthermore, nurse administrators exhibit their desire to learn proactively from the

insights and perspectives of their staff. Surveys provide the opportunity to align employees' views on patient and work safety issues; as well as, contribute to increased safety awareness and organizational commitment throughout the health care facility. Future regional wide measurements and regular auditing between units and longitudinal comparisons can allow bench marking to occur and validate change processes. Achieving safety awareness and learning opportunities requires nurse administrators to provide constant feedback and communication to hospital units and teams. As found within the study, staff desire greater feedback and communication from their leaders and fellow team mates. To build and develop systems focused on care quality and patient safety, nurse administrators will have to engage their staff in regular and consistent feedback mechanisms and facilitate the recognition that change is necessary.

Educating administrators on the use of LMX and TMX can maximize identify and empower nurses who want to adapt and change processes and behaviors (Laschinger et al., 2007). Evidence clearly indicates that nurses work at the interface of patients and healthcare, acting as human surveillance systems and play a major role in protecting patients and themselves from harm (Hofmann & Mark, 2006; Naveh et al., 2005; IOM, 2004). Nurse administrators have the ability to encourage acute care nurses and other team members regarding the importance to detect and learn from errors, proactively and pre-emptively analyze and discuss unexpected events, and encourage critical thinking for all work activities and processes. Building alliances among nurses and other healthcare team members would be beneficial in fostering partnerships which can result in positive SC.

Conclusion

This research study enriched the body of knowledge of SC and leadership. This is the first study to examine acute care nurses' perceptions of LMX, TMX, and SC in an acute care hospital. Findings indicated that higher levels of LMX and TMX correlated positively with SC. A positive SC has been linked to decrease patient adverse events, decreased nurses' intention to leave position or job, and lower nurse emotional exhaustion. Of significance, this study found that over 66% of the variance for SC was attributable to LMX, TMX, and nurses' age. Although several study limitations were present, the study findings have practical implications for nursing leadership. Limitations in the study design and key results have generated recommendations for future studies and theory development. Further review of the associations between LMX, TMX, SC and patient outcomes are warranted.

In conclusion, this study provided new insights that are useful to nursing managers and hospital administrators about the mechanisms by which nurses' perceptions of leadership and teamwork environment may transform the work environment to improve SC and patient safety outcomes.

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APPENDICES

Appendix A
Demographic Questionnaire

1) Employment status (please check one) _____ Full-Time _____ Part-Time

2) How many months or years (indicate total number)

   a) Have you worked as a RN/LPN? _____ Months / or _____ Years

   b) Have you worked with your present direct supervisor/nurse manager _____ Months / or _____ Years

3) Education Completed (please check all that applies):

Nursing	**Non Nursing**
_____ Diploma	_____ Baccalaureate
_____ Baccalaureate	_____ Masters/PhD
_____ Masters/PhD	_____ Specialty Certificate

4) Identify the educational level that you initially acquired to become an acute care nurse.

   _____LPN _____RN Diploma _____BN

5) Sex (please check one) _____ Male _____ Female

6) What year were you born? 19_____

Appendix B
Leader Member Exchange (LMX 7) Questionnaire

Instructions: This questionnaire contains items that ask you to describe your relationship with your leader. For each of the items, indicate the degree to which you think the item is true for you by circling one of the responses that appear below the item.

1) Do you know where you stand with your leader . . . [and] do you usually know how satisfied your leader is with what you do?

Rarely	Occasionally	Sometimes	Fairly Often	Very Often
1	2	3	4	5

2) How well does your leader understand your job problems and needs?

Not A Bit	A Little	A Fair Amount	Quite A Bit	A Great Deal
1	2	3	4	5

3) How well does your leader recognize your potential?

Not At All	A Little	Moderately	Mostly	Fully
1	2	3	4	5

4) Regardless of how much formal authority your leader has built into his or her position, what are the chances that your leader would use his or her power to help you solve problems in your work?

None	Small	Moderate	High	Very High
1	2	3	4	5

5) Again, regardless of the amount of formal authority your leader has, what are the chances that he or she would “bail you out” at his or her expense?

None	Small	Moderate	High	Very High
1	2	3	4	5

6) I have enough confidence in my leader that I would defend and justify his or her decision if he or she were not present to do so.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

7) How would you characterize your working relationship with your leader?

Extremely Ineffective	Worse Than Average	Average	Better Than Average	Extremely Effective
1	2	3	4	5

SOURCE: Reprinted from "Relationship-Based Approach to Leadership: Development of Leader–Member Exchange (LMX) Theory of Leadership Over 25 Years: Applying a Multi-Level, Multi-Domain Perspective," by G. B. Graen and M. Uhl-Bien, 1995, *Leadership Quarterly*, *6*(2), 219–247. Copyright © 1995.

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Appendix C
Team Member Exchange (TMX) Questionnaire

Please place the number to the left of each item, which most closely corresponds to how you currently feel.

1	2	3	4	5	6	7
Strongly Disagree	**Moderately Disagree**	**Slightly Disagree**	**Neither Disagree nor Agree**	**Slightly Agree**	**Moderately Agree**	**Strongly Agree**

1) _____ When other members of my team are busy I often volunteer to help them out.

2) _____ When I am busy, other members of my team often volunteer to help me out.

3) _____ I frequently take actions that make things easier for other members of my team.

4) _____ Other members of my team frequently take actions that make things easier for me.

5) _____ I frequently recognize the efforts of other members of my team.

6) _____ Other members of my team frequently recognize my efforts.

7) _____ I communicate openly with other members of my team about what I expect from them.

8) _____ Other members of my team communicate openly with me about what they expect from me.

9) _____ I frequently provide support and encouragement to other members of my team.

10) _____ Other members of my team frequently provide support and encouragement to me.

11) _____ I frequently suggest ideas that other members of my team can use.

12) _____ Other members of my team frequently suggest ideas that I can use.

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Appendix D
Safety Climate Survey (SCSu) Questionnaire

Items were scored utilizing a 5-point Likert-type scale ranging from "Disagree Strongly" to "Agree Strongly", "Not Applicable" was allowed as an option as well. Items 1-21 included items pertaining to safety climate while items 22-28 included items regarding demographics and open ended unit title/location.

Please answer the following items with respect to your specific unit or clinical area. Choose your responses using the scale below.

1) The culture of this clinical area makes it easy to learn from the mistakes of others.
   - o Disagree Strongly
   - o Disagree Slightly
   - o Neutral
   - o Agree Slightly
   - o Agree Strongly
   - o Not Applicable

2) Medical Errors are handled appropriately in this clinical area.
   - o Disagree Strongly
   - o Disagree Slightly
   - o Neutral
   - o Agree Slightly
   - o Agree Strongly
   - o Not Applicable

3) The senior leaders in my hospital listen to me and care about my concerns.
   - o Disagree Strongly
   - o Disagree Slightly
   - o Neutral
   - o Agree Slightly
   - o Agree Strongly
   - o Not Applicable

4) The physician and nurse leaders in my area listen to me and care about my concerns.
   - o Disagree Strongly
   - o Disagree Slightly
   - o Neutral
   - o Agree Slightly
   - o Agree Strongly
   - o Not Applicable

5) Leadership is driving us to be a safety-centered institution.
   - Disagree Strongly
   - Disagree Slightly
   - Neutral
   - Agree Slightly
   - Agree Strongly
   - Not Applicable

6) My suggestions about safety would be acted upon if I expressed them to management.
   - Disagree Strongly
   - Disagree Slightly
   - Neutral
   - Agree Slightly
   - Agree Strongly
   - Not Applicable

7) Management/Leadership does not knowingly compromise safety concerns for productivity.
   - Disagree Strongly
   - Disagree Slightly
   - Neutral
   - Agree Slightly
   - Agree Strongly
   - Not Applicable

8) I am encouraged by my colleagues to report any patient safety concerns I may have.
   - Disagree Strongly
   - Disagree Slightly
   - Neutral
   - Agree Slightly
   - Agree Strongly
   - Not Applicable

9) I know the proper channels to direct questions regarding patient safety.
   - Disagree Strongly
   - Disagree Slightly
   - Neutral
   - Agree Slightly
   - Agree Strongly
   - Not Applicable

10) I receive appropriate feedback about my performance.
    - Disagree Strongly
    - Disagree Slightly
    - Neutral
    - Agree Slightly
    - Agree Strongly
    - Not Applicable

11) I would feel safe being treated here as a patient
    - Disagree Strongly
    - Disagree Slightly
    - Neutral
    - Agree Slightly
    - Agree Strongly
    - Not Applicable

12) Briefing personnel before the start of a shift (i.e., to plan for possible contingencies) is an important part of patient safety.
    - Disagree Strongly
    - Disagree Slightly
    - Neutral
    - Agree Slightly
    - Agree Strongly
    - Not Applicable

13) Briefings are common here.
    - Disagree Strongly
    - Disagree Slightly
    - Neutral
    - Agree Slightly
    - Agree Strongly
    - Not Applicable

14) I am satisfied with the availability of clinical PHYSICIAN leadership.
    - Disagree Strongly
    - Disagree Slightly
    - Neutral
    - Agree Slightly
    - Agree Strongly
    - Not Applicable

15) I am satisfied with the availability of clinical NURSING leadership.
- Disagree Strongly
- Disagree Slightly
- Neutral
- Agree Slightly
- Agree Strongly
- Not Applicable

16) I am satisfied with the availability of clinical PHARMACY leadership.
- Disagree Strongly
- Disagree Slightly
- Neutral
- Agree Slightly
- Agree Strongly
- Not Applicable

17) This institution is doing more for patient safety now, than it did one year ago.
- Disagree Strongly
- Disagree Slightly
- Neutral
- Agree Slightly
- Agree Strongly
- Not Applicable

18) I believe that most adverse events occur as a result of multiple system failures, and are not attributable to one individual's actions.
- Disagree Strongly
- Disagree Slightly
- Neutral
- Agree Slightly
- Agree Strongly
- Not Applicable

19) The personnel in this clinical area take responsibility for patient safety.
- Disagree Strongly
- Disagree Slightly
- Neutral
- Agree Slightly
- Agree Strongly
- Not Applicable

20) Personnel frequently disregard rules or guidelines that are established for this clinical area.
    - Disagree Strongly
    - Disagree Slightly
    - Neutral
    - Agree Slightly
    - Agree Strongly
    - Not Applicable

21) Patient safety is constantly reinforced as the priority in this clinical area.
    - Disagree Strongly
    - Disagree Slightly
    - Neutral
    - Agree Slightly
    - Agree Strongly
    - Not Applicable

22) Have you ever completed this survey before?
    - Yes
    - No
    - Don't Know

Background Information

23) Job Position (mark only one):
    - Attending/Staff Physician
    - Registered Nurse
    - Dietician
    - Fellow Physician
    - Nurse Manager/Charge Nurse
    - Support Associate
    - Resident Physician
    - Resident Physician
    - LVN
    - Medical Administrator
    - Pharmacists
    - Respiratory Therapist
    - Technicians (e.g., EKG, Lab, Radiology)
    - PT/OT/Speech
    - Other

24) Experience in position
   - Less Than 6 Months
   - 6 – 11 Months
   - 1 – 2 Years
   - 3 – 7 Years
   - 8 – 12 Years
   - 13 – 20 Years
   - 21 Years or Over

25) Experience in specialty
   - Less Than 6 Months
   - 6 – 11 Months
   - 1 – 2 Years
   - 3 – 7 Years
   - 8 – 12 Years
   - 13 – 20 Years
   - 21 Years or Over

26) Experience in organization
   - Less Than 6 Months
   - 6 – 11 Months
   - 1 – 2 Years
   - 3 – 7 Years
   - 8 – 12 Years
   - 13 – 20 Years
   - 21 Years or Over

27) Age
   - Less Than 30
   - 30 – 34 Years
   - 35 – 39 Years
   - 40 – 44 Years
   - 45 Years or Over

28) Unit (please write in title and/or location):

Permission obtained for use from Dr. Thomas by e mail on October 5/2012

Appendix E
Ethics Approval

UNIVERSITY OF MANITOBA | Research Ethics and Compliance
Office of the Vice-President (Research and International)

Human Ethics
208-194 Dafoe Road
Winnipeg, MB
Canada R3T 2N2
Phone +204-474-7122
Fax +204-269-7173

APPROVAL CERTIFICATE

September 10, 2013

MCNHR

TO: **Antonina De Pau**
Principal Investigator

FROM: **Lorna Guse, Chair**
Education/Nursing Research Ethics Board (ENREB)

Re: **Protocol #E2013:090**
"Nurses' Perceptions of Leadership, Teamwork, and Safety Climate in a Community Hospital located in Western Canada: A Cross-sectional study"

Please be advised that your above-referenced protocol has received human ethics approval by the **Education/Nursing Research Ethics Board**, which is organized and operates according to the Tri-Council Policy Statement (2). **This approval is valid for one year only.**

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

Please note:

- **If you have funds pending human ethics approval, please mail/e-mail/fax (261-0325) a copy of this Approval (identifying the related UM Project Number) to the Research Grants Officer in ORS in order to initiate fund setup. (How to find your UM Project Number: http://umanitoba.ca/research/ors/mrt-faq.html#pr0)**

- **If you have received multi-year funding for this research, responsibility lies with you to apply for and obtain Renewal Approval at the expiry of the initial one-year approval; otherwise the account will be locked.**

The Research Quality Management Office may request to review research documentation from this project to demonstrate compliance with this approved protocol and the University of Manitoba *Ethics of Research Involving Humans.*

The Research Ethics Board requests a final report for your study (available at: http://umanitoba.ca/research/orec/ethics/human_ethics_REB_forms_guidelines.html) **in order to be in compliance with Tri-Council Guidelines.**

Appendix F
Initial Introductory Email/Intranet Letter via Blind Carbon Copy

UNIVERSITY OF MANITOBA

Faculty of Nursing

Helen Glass Centre for Nursing
89 Curry Place
Telephone (204) 474-7452
Fax (204) 474-7682
nursing_info@umanitoba.ca
umanitoba.ca/nursing
Canada, R3T 2N2
Winnipeg, Manitoba

Nurses' Perceptions of Leadership, Teamwork, and Safety Climate in a Community Hospital located in Western Canada: A Cross-sectional Study

Date

Dear LPN or RN:
This email is being forwarded by the department of XXXResearch and Evaluation Department on behalf of Antonina De Pau a graduate student in the Faculty of Nursing, University of Manitoba.

My name is Antonina De Pau, a Registered Nurse completing my Master of Nursing studies at the University of Manitoba under the supervision of Dr. Judith Scanlan. I would like to invite you to participate in a research project about acute care nurses' perceived relational leadership (quality of nurse manager – clinical nurse relationships), team member exchange (quality of nurse to nurse relationship) and perceived safety climate A convenience sampling of acute care nurses will be performed. If you are a full time or part time LPN or RN nurse working in a community based acute care hospital and have worked with your current nurse manager and staff nurse team members for at least 3 months, please consider participating in this important study.

This survey contains questions regarding your perspective of the relationship you have with your manager, your nurse teammates, safety climate, and demographic questions. These questions are critical to understanding the nursing perspective on issues of leadership, team work, and safety climate. The results of this study will assist the nursing profession to gain a better understanding of factors that influence safety climate.

Your unit manager will provide you with a survey package to complete. The survey package will take you approximately 15-20 minutes of your time to complete. Your participation is entirely voluntary. There are no known risks to participate in this study. If you choose to complete the anonymous questionnaire you will be entered into one of four draws for Amazon.com for gift certificates ranging from $50 to $100. All participants will receive a Tim's card valued at $3. Your participation will provide opportunity to share information useful to creating a healthy and safe work and patient climate. If you have any questions about this study, do not hesitate to contact me directly using the email or phone numbers listed below.

This research has been approved by the Education/Nursing Ethical Review Board and the XXX Institute of Clinical Research and Evaluation. **If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Coordinator (HEC) at 204-XXX-XXXX.** Thank you for considering my request.

Sincerely,

Antonina De Pau

Antonina De Pau, R.N., B.N.
Graduate Nursing Student
University of Manitoba
umrusso@umanitoba.ca
204-XXX-XXXX

Appendix G
Reminder E-mail/Intranet Letter via Blind Carbon Copy

UNIVERSITY OF MANITOBA

Faculty of Nursing

Helen Glass Centre for Nursing
89 Curry Place
Telephone (204) 474-7452
Fax (204) 474-7682
nursing_info@umanitoba.ca
umanitoba.ca/nursing
Canada, R3T 2N2
Winnipeg, Manitoba

Nurses' Perceptions of Leadership, Teamwork, and Safety Climate in a Community Hospital located in Western Canada: A Cross-sectional Study

Date

Dear LPN or RN:

This e mail is being forwarded by the department of the XXX Research and Evaluation Department on behalf of Antonina De Pau a graduate student in the Faculty of Nursing, University of Manitoba.

A survey package was recently mailed to you seeking acute care nurses' perceived relational leadership (quality of nurse manager – clinical nurse relationships), team member exchange (quality of nurse to nurse relationship) and perceived safety climate in your hospital.

If you have already completed and returned the survey to me, please accept my sincere gratitude. If not, please consider doing so today. Your help will be invaluable. It is only by asking for the viewpoints of clinical nurses such as you, that we can gain a greater understanding of factors that influence the quality of safety climate outcomes in acute care. This is very important in order to develop team work processes and leadership styles that will ensure a healthy and safe workplace. **The survey was sent only to one community acute care hospital; therefore, your opinion and input to this research study is important so that the results can accurately reflect the perspectives of the nurses within your facility.**

If you did not receive a survey or it was misplaced, please be assured further packages will be forthcoming from your manager in week 4 or March 14/2014 or contact myself at the e-mail address below. Remember the early bird draw is February 14/2014.

This research has been approved by the XXX Institute of Clinical Research and Evaluation and Education/Nursing Ethical Review Board. **If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Coordinator (HEC) at 204-XXX-XXXX.**
Thank you for considering my request.

Sincerely,

Antonina De Pau

Antonina De Pau, R.N., B.N.
Graduate Nursing Student
University of Manitoba
umrusso@umanitoba.ca
204-XXX-XXXX

Appendix H
Final Letter of Information

UNIVERSITY OF MANITOBA

Faculty of Nursing

Helen Glass Centre for Nursing
89 Curry Place
Telephone (204) 474-7452
Fax (204) 474-7682
nursing_info@umanitoba.ca
umanitoba.ca/nursing
Canada, R3T 2N2
Winnipeg, Manitoba

Registered Nurses' Perceptions of Leadership and Safety Climate in a Community Hospital located in Western Canada: A Cross-sectional Correlational Study

Date

Dear LPN or RN:
This e mail is being forwarded by the department of XXX Research and Evaluation Department on behalf of Antonina De Pau a graduate student in the Faculty of Nursing, University of Manitoba.

About six weeks ago, you were invited to participate in a survey that asked questions regarding your perspective of the relationship you have with your manager, demographic information, and safety climate. If you have already completed the survey please accept my sincere appreciation. I am writing again because of the importance that your survey has for helping achieve accurate results. Based on the responses received to date, we believe the survey will be very useful to creating safe and healthy work places. It is only by hearing from nearly everyone surveyed that we can be sure it truly captures the perspectives of the clinical nurses within the community hospital. In the event your survey has been misplaced, a replacement is enclosed. These survey questions are critical to understanding acute care nurses' perceived relational leadership (quality of nurse manager – clinical nurse relationships), and perceived safety climate. You can help by completing the enclosed survey which will take approximately 10-15 minutes of your time.

Your participation is entirely voluntary. Your participation is entirely voluntary. You may refuse to participate, refuse to answer any question or withdraw from the study at any time without negative consequences. Completion and return of your survey indicates your consent to participate. All responses will be kept confidential and your name will not be known to the researcher. Your name will never be identified in any report or presentation of the study and only grouped information will be reported. Individual responses will only be seen by Antonina De Pau and a research assistant, who will enter the responses into a computer file that is password protected. Questionnaires will be locked in a filing cabinet at the University of Manitoba, Faculty of Nursing and then will be shredded within seven years of the study's completion.

There are no known risks to participate in this study. Your participation will provide opportunity to share information useful to creating a healthy and safe work and patient climate. If you have any questions about this study, do not hesitate to contact us directly using the email or phone numbers listed below. If you have questions about your rights as a research participant, please contact Education Nursing Research Ethics Board (ENREB), University of Manitoba

If you choose to participate please use the pre-addressed envelope to return your completed survey. If you do not wish to participate in the survey, we encourage you to return your blank survey. Thank you for considering our request. There are no known risks to participate in this study. By completing this survey, you will have contributed to an increased understanding of the nursing work environment in your community hospital. This information can contribute to creating work places that are conducive to a safer environment. If you have any questions about this study, you may contact me using the email or phone number listed below.

I hope you will consider my request. If you choose to participate please use the pre-addressed envelope to return your completed survey. If you do not wish to participate in the survey, I encourage you to return your blank survey. Thank you for again for your time and consideration of my request to participate in this research study.

Sincerely,

Antonina De Pau

Antonina De Pau, RN, BN
Master of Nursing Candidate
umrusso@umanitoba.ca
204-XXX-XXXX

Appendix I
Letter of Implied Consent

UNIVERSITY OF MANITOBA

Faculty of Nursing

Helen Glass Centre for Nursing
89 Curry Place
Telephone (204) 474-7452
Fax (204) 474-7682
nursing_info@umanitoba.ca
umanitoba.ca/nursing
Canada, R3T 2N2
Winnipeg, Manitoba

Research Project Title: Nurses' Perceptions of Leadership, Teamwork, and Safety Climate in a Community Hospital located in Western Canada: A Cross-sectional Study

Principal Investigator and contact information: Antonina De Pau, XX XXX XXXX Road, Winnipeg, Manitoba. Email: umrusso@umanitoba.ca, Phone: 204-XXX-XXXX

Research Supervisor and contact information: Dr. Judith Scanlan, Helen Glass Centre for Nursing, University of Manitoba. Email: Judith.Scanlan@umanitoba.ca, Phone: 204-XXX-XXXX.

Sponsor: Manitoba Centre for Nursing & Health Research, Kathleen and Winnifred Ruane Graduate Research Award.

This letter, a copy of which I will leave with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully.

Dear LPN or RN:
My name is Antonina De Pau, a Registered Nurse completing my Master of Nursing studies at the University of Manitoba under the supervision of Dr. Judith Scanlan. I would like to invite you to participate in a research project.

Project Description: "Nurses' Perceptions of Leadership, Teamwork, and Safety Climate in a Community Hospital located in Western Canada: A Cross-sectional Study" examines acute care nurses' perceived relational leadership (quality of nurse manager – clinical nurse relationships), team member exchange (quality of nurse to nurse relationship) and perceived safety climate. If you are a full time or part time registered or licensed practical nurse working within this hospital and have worked with your current nurse manager and team members for at least 3 months, please consider participating in this important study by completing the enclosed surveys. This survey package contains questions regarding your perspective of the relationship you have with your manager, the relationship you have with your team members, the unit's safety climate, and demographic questions. These questions are critical to understanding the nursing perspective on issues of leadership, teamwork, and safety climate. The results of this study will assist the nursing profession to gain a better understanding of factors that influence safety climate.

Location and Time Requirement: You can help by completing the enclosed surveys which will take approximately 15 to 20 minutes of your time. Your participation is entirely voluntary. You may refuse to participate, refuse to answer any question or withdraw from the study at any time without negative consequences.

Confidentiality: I will keep any information gathered in this research strictly confidential.
Completion and return of your survey indicates your consent to participate. All responses will be kept confidential and your completed surveys will be assigned a code such as nurse 001 or nurse 002 etc. Your name will never be identified in any report or presentation of the study and only grouped information will be reported. Individual responses will only be seen by me, (research assistant to be named) and Dr. Judith Scanlan. I will enter your anonymous survey responses into a computer file (SAS) that is password protected. Completed questionnaires will be locked in a filing cabinet in my personal home office and then will be shredded within seven years of the study's completion (12/2020) as per the University of Manitoba's policy and procedure for destroying confidential material. Electronic data will be deleted (12/2020).

Dissemination: Results from this research which is my master's thesis will be disseminated in aggregate (group) form only at professional meetings and by publication in academic journals.

Risks and Benefits: There are no known risks to participate in this study. Your participation will provide opportunity to share information useful to creating a healthy and safe work and patient climate.

Feedback/Debriefing: An executive summary of the study's findings will be sent by blind carbon copy email to all acute care nurses. An oral presentation will be provided at the participating hospital.

Compensation: To increase survey response rates, I will offer four incentives draws (2 early bird draw of $50 gift certificate to Amazon.com and 2 final draws of $100 gift certificate to Amazon 2 x $100.00 . When you return a completed survey in a separate sealed manila envelope, an undergraduate research assistant will open the envelopes and mail a $3 Tim's card to you. All active participants' names will be placed in a random draw for the aforementioned incentive draws. The undergraduate research assistant will draw the lucky winners and award the prize. After the final draw the research assistant will place all tickets in the confidential waste bin to be shredded. If you have any questions about this study, do not hesitate to contact us directly using the email or phone numbers listed below. If you have questions about your rights as a research participant, please contact Education Nursing Research Ethics Board (ENREB), University of Manitoba.

If you choose to participate, please complete the attached four questionnaires and remember not to write your name on the forms. Write your name and unit on the draw form and insert it into the small manila envelope. Seal the envelope and include it with the four completed anonymous surveys in the pre-addressed envelope that can be submitted into an identified survey banker's box within your work area. Thank you for considering our request.

Consent: Your completion and return of the four surveys indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study prior to mailing the completed forms, and /or refrain from answering any questions you prefer to omit, without prejudice or consequence. You should feel free to ask for clarification or new information at any time. The University of Manitoba may look at my research records to see that the research is being done in a safe and proper way.

This research has been approved by the Education/Nursing Ethical Review Board and the XXX Institute of Clinical Research and Evaluation.

If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Secretariat at 204-XXX-XXXX, or e-mail margaret_bowman@umanitoba.ca. A copy of this letter has been given to you to keep for your records and reference.

Sincerely;

Antonina De Pau

Antonina De Pau, R.N., B.N.
Graduate Nursing Student
University of Manitoba
umrusso@umanitoba.ca
204-XXX-XXXX