Teamwork and Staffing in an Acute Care Hospital

by

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Abstract

The literature suggests that teamwork among patient care teams can have positive effects on work environment, job satisfaction, and quality of patient care. The purpose of this study was to determine the perceived level of nursing teamwork by registered nurses, registered practical nurses, personal support workers, and unit clerks working on patient care teams in one acute tertiary care hospital in northern Ontario, and to determine if there is a relationships between the staff scores on the Nursing Teamwork Survey (NTS) and participant perception of adequate staffing. Using a quantitative descriptive cross-sectional research design, 600 staff were invited to complete the NTS with a 33% response rate (N=200). The participants from the critical care unit reported the highest scores on the NTS, while participants from the inpatient surgical (IPS) unit reported the lowest scores. Participants from the IPS unit also reported less experience, less satisfaction in their current position, and a higher intention to leave. No statistically significant correlation was found between scores on the NTS and the perception of adequate staffing. Strategies to increase teamwork among patient care teams may positively influence job satisfaction and patient care on patient care units.

Keywords: team, teamwork, staffing, nursing, patient care

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Chapter I

Background

Teamwork is currently a topic of interest in healthcare. There is an expectation that the various healthcare disciplines will work together to ensure that all patients and families are receiving optimal care in any health care setting (Estryn-Behar et al., 2007). The nursing profession tends to focus on teamwork that seeks to ensure safety and satisfaction for both the patient and staff populations (Nelsey & Brownie, 2012). Teamwork is thought to benefit members of the patient care team in a number of ways (Rafferty, Ball, & Aiken, 2001), and effective teamwork has been suggested as a means of overcoming some of the challenges faced by patient care teams (Nelsey & Brownie, 2012). Effective teamwork promotes a work environment that has a positive impact on both staff and patients (Kalisch & Lee, 2009; Rathert & Fleming, 2008).

In a continuously changing work environment, teamwork can be helpful in ensuring that patient safety is maintained despite ongoing changes in patient condition and workload (Kalisch & Lee, 2010). However, effective teamwork does not necessarily occur amongst a group of people simply because they are called a "team" or are expected to work towards a common goal, which is the case of healthcare teams should be safe, quality patient care (Kalisch, Weaver, & Salas, 2009). Unfortunately, there may be many situations or circumstances where individuals are working in silos instead of engaging in effective teamwork (Kalisch & Lee, 2010; Leonard, Graham, & Bonacum, 2004).

Nursing and Teamwork

The nursing profession tends to focus on teamwork that seeks to ensure safety and satisfaction for both the patient and staff populations (Nelsey & Brownie, 2012). The current patient population is one that is aging, is more acutely ill, and has higher rates of chronic illness. This leaves nurses with a heavier workload and less than ideal work environments (Nelsey & Brownie, 2012), which may impact their participation in effective teamwork on health care teams.

It has been well-documented in the nursing literature that teamwork is an effective means of improving quality in a workplace, job satisfaction among health care workers (Kalisch & Begeny, 2005), and quality of patient care (Miller, et al., 2008; Purdy, Laschinger, Finegan, Kerr, & Olivera, 2010). Furthermore, patient safety is enhanced by effective nursing teamwork (Kalisch, Weaver, & Salas, 2009). Rafferty, Ball, and Aiken (2001) found that teamwork was also associated with greater staff retention and less job stress and burnout. Thus, teamwork may provide many benefits to both the staff members working on a patient care unit and the patients under their care.

Teamwork may help with changing individual ideas of patient care from "my" patient assignment to "our" patient assignment, thus increasing the accountability of the entire team caring for a particular patient population on a patient care unit. In a continuously changing work environment, teamwork can be helpful in ensuring that patient safety is maintained despite ongoing changes in patient condition and workload (Kalisch & Lee, 2010). In comparison with other healthcare disciplines, nurses tend to report lower levels of teamwork (Chang, Ma, Chiu, Lin & Lee, 2009). Kalisch, Russell and Lee (2013) suggest that developing a further understanding of the teamwork among the consistent patient care team will ultimately result in

enhanced teamwork among the multidisciplinary team. This idea is supported by the research conducted by Kalisch, Lee, & Salas (2010).

Teamwork can help health care workers to achieve the ultimate goal of providing safe, efficient, and quality care to patients. Health care providers working together effectively as a team tend to make less errors than those working independently (Clark, 2009; Kalisch & Lee, 2009). When staff members perceive a more positive work climate, including teamwork, they also tend to perceive enhanced patient outcomes (Hinno, Partanen & Vehvilainen-Julkunen, 2011). Purdy et al. (2010) propose that teamwork is one of the main processes used in accomplishing safe and effective patient care, and this should undoubtedly be one of the priority goals for patient care teams. Pringle & Doran (2003) (as cited in Purdy et al., 2010) provided examples of quality patient outcomes: patient satisfaction and patient ability to participate in activities of daily living. However, Purdy et al. (2010) also identified that previous research has often focused on how nurses perceive quality of patient care without focusing on how patients and families perceive and understand this concept or on specific measures such as incidence of errors or accidents. In their concept analysis, Xyrichis and Ream (2008) found quality patient care to be one of the consequences of teamwork. It was suggested by Simpson (2009) that the quality of care provided to patient populations is positively influenced by how the nurses work to accomplish that goal.

Teamwork can have a positive influence on how employees view the quality of their work environment. As one of the many work environment factors, teamwork can impact how one perceives some of the related factors such as leadership and staffing, and subsequently how they experience the patient care team (Hinno et al., 2011). When effective teamwork is

occurring, it may provide reassurance to individual team members that they are supported by a team (Simpson, 2009), which may promote satisfaction in their role and work environment.

There is some research suggesting that effective teamwork can enhance job satisfaction for employees (Xyrichis & Ream, 2008). Kalisch, Lee and Rochman (2010) found that not only the level of teamwork, but also the type of patient care unit, to be factors contributing to job satisfaction, with staff working on specific patient care units more likely to identify themselves as being satisfied with their current position. A correlation also exists between the level of job satisfaction and an employee's intention to leave their position (Larrabee et al., 2003). According to Estryn-Behar et al. (2007), teamwork may be a factor that will deter team members from leaving their position, because of the positive influence it has on the work environment.

There was also research conducted that suggested teamwork contributes to recruitment and retention of staff (Nelsey & Brownie, 2012). The recruitment and retention of skilled, educated staff is a challenge currently facing the nursing profession (Nelsey & Brownie, 2012). Retention can be promoted by ensuring that work environments are conducive to job satisfaction of individual staff members, as well as the team as a whole (Nelsey & Brownie, 2012). Retention of trained, qualified staff is one of the many benefits that effective teamwork may provide to the organization as a whole (Xyrichis & Ream, 2008).

Job burnout in the nursing profession is one of many factors contributing to nurses leaving their positions (Estryn-Behar et al., 2007). Teamwork may decrease the levels of stress and burnout among team members. This may be because when effective teamwork is occurring, team members may experience fewer feelings of stress and may subsequently experience less burnout.

Conversely, a lack of effective teamwork may result in consequences such as a decrease in productivity and the inability to complete work in a timely and efficient manner (Salas, Sims, & Burke, 2005). Therefore, the importance of teamwork on any team should not be underestimated.

Recently, research has focused on multidisciplinary or interprofessional teamwork, while teamwork among the consistent staff (registered nurses, registered practical nurses, personal support workers, and unit clerks) on a patient care unit has not received as much attention. The staff working in these specific roles are those that tend to be on one particular patient care unit more often and providing direct care to the patients on the unit (Kalisch, Weaver, & Salas, 2009). In particular, acute care medical-surgical units have received little attention in the existing research about teamwork in comparison with specialty areas like the emergency room (ER), operating room (OR), and intensive or critical care units (ICU/CCU). According to the Canadian Institute for Health Information (CIHI) (2010), in 2008, 17.2% of frontline nursing staff, in Canada, worked in a medical-surgical setting, the largest percentage of any clinical area; while Spratley et al. estimate the number of nurses in these clinical settings to be as high as 32% in the United States (as cited in Davis, Ward, Woodall, Shultz & Davis, 2007). With greater than 44,000 RNs in these settings, it is clear that research to help enhance team functioning would benefit both staff and patients, by identifying current issues and providing suggestions for improvement (CIHI, 2010). In a study by Kalisch and Lee (2009), it was found that nursing teams working on medical-surgical units often reported lower levels of teamwork than in other clinical areas. As well, Schmalenberg and Kramer (2008) found that nurses who work in acute medical-surgical nursing settings often perceived their work environment to be less productive

than those in other areas, with inadequate staffing identified as being one of the many contributing factors.

In a changing healthcare arena, with issues such as an aging population (Purdy et al., 2010) and an increase in chronic disease, patient care teams will be faced with a number of challenges that will require them to use the available human resources to continue to provide quality patient care. The nursing profession is facing a number of workforce issues including staff shortages and high turnover rates (Kalisch et al., 2010a). These issues are compounded by the fact that the Canadian Nurses Association (2009b) projected there may be a shortage of close to 60,000 RNs in Canada by 2022 if nothing is done to alleviate the situation. In 2001, Aiken et al. provided a number of issues that may go along with an ongoing shortage of hospital nurses including an increase in nurses who experience a lower level of job satisfaction, an increase in nurses contemplating leaving their current position, a workforce increasing in age, and young or newly graduated nurses seeking employment in agencies other than acute care hospitals. Due to budget and financial constraints, hospitals and other health care facilities are not necessarily in a position to hire additional staff. It is clear that changes must occur, and strategies implemented, to ensure that nurses currently in the workforce are used to their optimal capacity in order to promote work satisfaction, patient and staff safety, and to facilitate the best possible patient health outcomes.

Teamwork and Staffing

The staffing issues that the nursing profession is facing may have serious implications for the future of patient care. The Canadian Nurses Association (2009b) suggested that making improvements to work environments in order to increase staff productivity might be one option to offset some of the burden from inadequate nursing staff across the country. Teamwork is one mechanism that may enhance the productivity of a nursing team (Salas, Sims, & Burke, 2005), as well as enhance the level of job satisfaction (Kalisch et al., 2010a). When nurses perceive poor teamwork, they may be more inclined to leave their position (Estryn-Behar et al., 2007). This may lead to staffing problems such as recruitment, retention, and turnover.

Staffing levels have been cited in the nursing research as a factor associated with teamwork (Kalisch & Lee, 2011). The concept of nurse-to-patient staffing ratio is one approach used in the staffing research which focuses on developing a better understanding of the relationship between the actual number of nurses to the number of patients assigned on a particular shift (Unruh, 2008). Staffing skill mix can also be addressed by looking at the education or experience level of each staff member when considering staffing levels and appropriate patient assignments (Unruh, 2008). Determining what constitutes adequacy in terms of staffing may vary significantly between units depending on multiple factors (Unruh, 2008). For this reason, adequate staffing may be subjective and based on individual perceptions, in addition to what each individual is comfortable with in terms of workload and nurse-to-patient ratio. For example, some staff may feel that they are capable of handling a larger and more acute patient load than others, while other staff members may feel overwhelmed with the usual patient assignment on that unit. Furthermore, nurse perceptions may depend on the acuity and complexity of patients, and the education and experience of each staff member.

It is evident that nursing and health care will continue to face hardships in terms of human resources in the future. It will likely take multiple strategies and interventions to alleviate some of the burden that inadequate staffing will have on patient care. The benefits of teamwork for both patients and staff are numerous. Teamwork among patient care teams, both intradisciplinary and interdisciplinary, may help to ensure that all patients receive safe, quality, consistent care; while health care providers experience a positive work environment, increased job satisfaction, and decreased stress and burnout.

Problem Statement

While the benefits of nursing teamwork have been clearly demonstrated in the literature, effective teamwork is not always achieved on patient care units in a hospital setting (Kalisch, Weaver, & Salas, 2009). There is also a link between having a full staff complement, or adequate staffing for the unit, and the level of nursing teamwork that occurs within a patient care team during a particular shift.

Kalisch and Lee (2009) suggested that staff working on medical-surgical units tend to perceive a lower level of teamwork than staff working on other patient care units. However, little research has been conducted in these clinical areas, including surgical units. All hospital units could benefit by having more effective and efficient patient care teams.

Statement of Purpose of the Study

The purpose of this study is to determine the perceived level of (nursing) teamwork by individuals working on patient care teams, in an acute-care healthcare facility. The study will also seek to determine if there is a relationship between the perception of the level of staffing and the level of nursing teamwork on each patient care unit. The results of the study will seek to

guide discussion about strategies that may be implemented to enhance effective teamwork on patient care units.

Research Questions

1. What is the level of nursing teamwork on each patient care unit of a hospital?

2. Does a relationship exist between the perception of the level of staffing and the level of nursing teamwork, on each patient care unit?

Significance to Nursing

Teamwork is an important current issue in nursing. There is focus in the research on interdisciplinary and interprofessional teams, but a lack of literature addressing teams on a patient care unit (Kalisch & Lee, 2010; Kalisch, Weaver, & Salas, 2009). Furthermore, the majority of research conducted about teamwork in nursing has involved the specialty clinical settings such as the ER and OR (Kalisch & Lee, 2010). Nurses (both registered nurses and registered practical nurses), personal support workers, and unit clerks are the most consistent staff members working on a patient care unit in the sense that they often have a "home" unit where they spend the majority of their time working. Furthermore, these staff members are almost always present on the unit, while allied health professionals tend to work weekdays more frequently. Therefore, it is essential that the consistent staff members are able to function effectively as a team (Kalisch, Weaver, & Salas, 2009).

Work environments often include high levels of stress, acuity of patients, and potential for errors. Nurses and members of the patient care team must consider adopting strategies to enhance job satisfaction and quality of patient care (Salas, Rosen, & King, 2007). In order to ensure patient safety, positive patient outcomes, job satisfaction, and staff retention, it is important to develop a better understanding of work environment factors and characteristics,

such as teamwork, and the implications of these for practice. For these reasons, teamwork among patient care teams must be further investigated (Kalisch, Russell, & Lee, 2013).

Conceptual Framework

The conceptual framework used to guide this research was the "Big Five" in teamwork (Salas, Sims, & Burke, 2005). This model was also used in the development of the Nursing Teamwork Survey (Kalisch, Lee & Salas, 2010b), the instrument used to measure the two variables of interest in the current study. The framework includes five "core components" and three "coordinating mechanisms". The five primary components are: team leadership, mutual performance monitoring, backup behaviour, adaptability, and team orientation. The three additional components are: shared mental models, mutual trust, and closed-loop communication (Salas, Sims, & Burke, 2005). Each of these concepts will be discussed in the following section.

Chapter II

Literature Review

A literature review was conducted in order to determine what research existed about teamwork among patient care teams and staffing in nursing. The literature review included a search of multiple databases: CINAHL, Proquest, and OVID. The keywords utilized in the search engines were: teamwork, nursing, staffing, adequate staffing, and perception of staffing, work environment, and nursing teams.

The literature search revealed relatively few articles pertaining specifically to teamwork on nursing and patient care teams on inpatient units, while specialty clinical areas such as the operating room, intensive care unit, and emergency room have received significant attention in the research. One concept analysis about teamwork was retrieved (Xyrichis & Ream, 2008). Some potentially appropriate articles were excluded due to being published in a language other than English. As well, much of the recent research about teamwork in health care focused on interdisciplinary teams as opposed to strictly patient care (nursing) teams (Kalisch & Lee, 2009).

The majority of the recent research about nursing teamwork and the functioning of nursing teams has been conducted by one group of researchers. Most of their published work included participants with a similar demographic to the targeted population in the current study. A review of the reference lists provided in key articles was also completed to ensure a thorough search of available and relevant literature.

Kalisch and Lee (2009) surveyed 1,758 members of patient care teams from two hospitals using the NTS. The results revealed that the medical-surgical units had some of the lowest scores for teamwork overall, while the maternal-child units had some of the highest scores. The results also showed a correlation between experience on the unit and overall scores on the NTS,

whereby participants with less than six months experience on their patient care unit had higher scores; this was an indication staff perceived higher levels of teamwork occurring on their patient care unit. The researchers also found that participants who perceived their unit was adequately staffed 100% of the time scored highest on the NTS (Kalisch, & Lee, 2009).

In a larger study where 3675 participants completed the NTS, the majority of staff were 35 years or older (62.3%), and over half had a baccalaureate nursing degree (55.7%) (Kalisch, Lee, & Rochman, 2010). In this study, most staff held full-time positions (83.8%). This study focused on the level of job satisfaction, as measured by the NTS. Participants who had higher scores on the NTS tended to be more satisfied with both their current position and occupation (Kalisch, et al., 2010a). According to the results of this study, the participants who perceived adequate staffing on their work unit also tended to rate their satisfaction in their role higher (Kalisch et al., 2010a). Participants who worked in the emergency department were more satisfied in their positions in comparison to those working on a medical-surgical unit (Kalisch et al., 2010a).

A study of 2545 participants examined the relationship between staffing levels and scores on the NTS (Kalisch & Lee, 2011). Participants with higher scores on the NTS perceived higher levels of teamwork on their patient care unit, while those with lower scores on the NTS perceived lower levels of nursing teamwork on their unit. This study used hours per patient day as a variable to determine staffing on each unit. The study suggested that adequate staffing was an essential factor for teamwork to occur on patient care units. The results showed that a higher level of staffing, as measured by the hours per patient day, lead to better scores on the backup scale (on the NTS) (Kalisch & Lee, 2011).

Using the Nursing Work Index-Revised survey tool, a cross-sectional study with a sample of 334 registered nurses (RNs) was conducted (Hinno, Partanen, & Vehvilainen-Julkunen, 2011). In this study, 60% of participants had worked for approximately five years as an RN on their patient care unit, and approximately the same number answered that they were younger than 40 years of age. Adequate staffing was one of the major work environment factors that was identified by the participants, with just over half of participants identifying that they perceived sufficient staffing on their unit (Hinno et al., 2011). When RNs did not perceive staffing to be adequate on their unit, they identified a lack of quality in terms of patient care. Other factors that were identified as being important for a quality work environment included effective leadership, confidence in nursing skills, and teamwork with physicians (Hinno, et al., 2011).

A cross-sectional survey study conducted by Cho et al. (2009) addressed staffing using two variables, one of which was the perception of participants regarding staffing adequacy. Only 21% of the 1365 nurses, from 65 ICUs across 22 Korean hospitals, who responded to the survey perceived their unit to have staffing levels that were adequate to provide excellent patient care (Cho et al., 2009).

In a study by Chang et al. (2009), 1475 participants working in four Taiwanese hospitals completed a survey addressing various work environment factors including job satisfaction and teamwork among the various healthcare disciplines. The results of this study suggested that physicians tend to experience greater job satisfaction. The study also found that nurses tend to have a more positive view about interprofessional collaboration.

Aiken et al. (2001) conducted survey-based research involving registered nurses from five developed countries: United States, Canada, England, Scotland, and Germany. The research

looked at the work environments and at the perceived quality of patient care, determined by surveying 43,329 nurses across 700 hospitals. In this study, the researchers explored issues such as job satisfaction, burnout, intention to leave, and staffing. The findings supported their identification of the many workplace issues affecting hospitals and suggested that it is essential to address those issues to ensure that patients are receiving the kind of care they deserve while being treated in hospital in order to ensure that positive outcomes are achieved.

In their qualitative research, Kalisch, Weaver, & Salas (2009) sought to determine if the concepts from the Salas framework for teamwork were also applicable to nurses working on patient care units in acute care hospitals. The researchers recognized the teams working on the patient care units as consisting of registered nurses (RNs), licensed practical nurses (LPNs), nursing assistants (NAs), and unit secretaries (USs). The researchers conducted 34 focus groups, with each session being specific to a certain role in silos, with the intention that it may be easier for participants to discuss their ideas and feelings about teamwork with people who shared their role and had a clear understanding of the responsibilities associated with that role. Staff members across five patient care units (ie. one intensive care unit, three med-surg units, and one obstetrics/gynecology unit) from one health care facility were invited to participate in these focus groups. A total of 170 staff members participated. The focus groups encouraged discussion about the experiences regarding teamwork on each patient care unit, and how it may or may not be occurring during a typical work day. The discussion from the focus groups highlighted concepts that were in line with key concepts in the Salas framework for teamwork. The findings from this research ultimately helped to guide the development of the Nursing Teamwork Survey.

Miller et al. (2008) performed a qualitative study with the goal of exploring two key concepts: nursing emotion work (the framework used to address how nurses work with their

patients and colleagues to improve patient care) and interprofessional collaboration (IPC). The intention of the authors was to develop an understanding about, and develop strategies to enhance, interdisciplinary teamwork. For eight months in 2006, the researchers observed, interviewed, and monitored nurses, physicians, and other allied healthcare staff, during their interactions, on general internal medicine patient care units in three Canadian tertiary care facilities. The nursing staff was observed interacting amongst themselves, as well as with other healthcare professionals working on the unit. IPC was observed in three main categories: between nurses, unofficial discussion in hallways, and official meetings or rounds. Nursing emotion work was actually found to be a barrier to effective IPC. Therefore, the authors suggested that in order for ICP to occur, nursing emotion work must be addressed, and a mutual trust and respect between all health care professionals must be developed. All of these issues must be dealt with in order to provide quality patient care, consequently enhancing patient outcomes.

Havens, Vasey, Gittell and Lin (2010) described a framework for "relational coordination (RC)" between various health care providers, including nurses, and how it works to ensure safe, quality patient care. RC consists of two features communication and working relationships among health care providers. The study included 747 registered nurses (RNs) working in five community healthcare facilities who completed surveys which asked questions related to their inter and intraprofessional interactions and communication, in addition to questions about the quality of patient care provided on their patient care unit. The findings demonstrated that nurses who work on the same patient care unit report more RC amongst eachother than with nurses working on different patient care units. As well, there was a positive correlation between RC and quality of care. Nurses from the obstetrics/gynecology and ER units had the lowest levels of

RC when looking at inter-unit relations. The RNs working on the ER and med-surg units identified that the level of patient care was lower on their units. The findings of this study are significant because they highlight the importance of developing relationships between health care providers and ensuring that effective communication may help to foster these relationships. Ultimately, encouraging and enhancing RC among all health care providers will help in achieving the goal of quality, safe, and effective patient care.

Kutney-Lee, Wu, Sloane and Aiken (2013) reported on their study that explored (a) RN burnout, (b) intent to leave, and (c) job satisfaction. The three outcomes were discussed in relation to work environment. The study looked at previously collected data from different surveys completed by 42,000 RNs in 1999 and 25,000 RNs in 2006 in 137 hospitals in Pennsylvania. In hospitals where improvements had been made in work environments, RNs reported decrease in burnout, intent to leave, and job dissatisfaction; whereas hospitals who had not made any changes to the work environment did not have participants reporting any significant changes. An important finding from the study was that RN staffing does not have as significant of an impact on the three nursing outcomes overall when compared with work environment, which was demonstrated to impact all three outcomes. However, the study reported that RN staffing levels had a significant association with RN burnout.

Staff working on medical-surgical units were found (a) to have lower scores on the NTS (Kalisch & Lee, 2009), (b) to be less satisfied in their positions (Kalisch et al., 2010a), and (c) to perceive lower levels of patient care (Havens et al., 2010).

The literature found a positive correlation between adequate staffing and (a) higher levels of teamwork, as evidenced by higher scores on the NTS (Kalisch & Lee, 2009; Kalisch & Lee,

2011), (b) increased job satisfaction (Kalisch et al., 2010a), and (c) increased staff perceptions of quality patient care (Hinno et al., 2011).

The following section will provide definitions of some of the key terms extracted from the literature review, as well as descriptions of the concepts included in the conceptual framework and the survey tool used for the current study.

Definition of Team and Teamwork

Team. Salas et al. (2005) are confident that teamwork is the definitive solution to ensuring the effective function of any team. Kalisch, Weaver, & Salas (2009) proposed three essential components of a team (a) having more than two individuals who share a goal or common purpose, (b) having defined roles within the team, and (c) ensuring that each team member understands the roles of all people participating on the team and ensuring team members work together through collaboration to achieve the determined goal. Kalisch and Lee (2009) defined team as a group of individuals who require each other to achieve a goal. In addition, teams should engage in constant communication and provide training for team members (Estryn-Behar et al., 2007). Whyte (2007) proposed a different perspective in describing teams by saying that teams are unique, while possessing many of the characteristics mentioned above. Individuals working on patient care teams may possess varying characteristics impacting the way they collectively engage in teamwork. Whyte (2007) also suggested that health care professionals often work across a number of teams. While this study considers the individuals who are currently working on patient care teams, these people may also be part of a multidisciplinary team, or a team that includes strictly the individuals working in the same role.

Salas et al. (2005) concluded that teamwork is a requirement for a team. This highlights the importance of ensuring that a patient care team is able to engage in successful teamwork. For

teams to function effectively, it is important that they are working collaboratively towards a common goal (Atwall & Caldwell, 2006). In the case of the patient care team, this goal should be providing exceptional quality care to all patients on a patient care unit. Exceptional quality care requires that team members see the entire patient care unit as their responsibility as opposed to being focused solely on their primary patient assignment (Kalisch, & Begeny, 2005). Kalisch and Begeny (2005) considered this type of team to be a "work team" because of these specific attributes.

   Teamwork. A team has at least two individuals, with defined roles, who collaborate in order to achieve a goal (Kalisch et al., 2009). Teamwork is the work performed by a team, and is an essential task of that team (Salas et al., 2005). Purdy et al. (2010) described teamwork as a process that must occur amongst individuals in order to complete required work. By this standard, teamwork really is the way in which a team of individuals functions together in order to fulfill the requirements set out for them. The World Health Organization (WHO) (2009) suggests that in order to develop a working knowledge of how teams work together, it is essential to first develop an understanding of the organization of the team as well as the practices that exist for effective functioning. According to the research by Kalisch, Weaver, & Salas (2009), the skills that one must possess to engage in teamwork are not innate, but must be learned. The goal of the team should be understood and collectively decided by all members, thus ensuring that all team members understand their individual roles and responsibilities, as well as those of their fellow team members. With that in mind, individual team members should be working for the greater good of the team and the patient population they are dealing with. According to the concept analysis conducted by Xyrichis and Ream (2008), teamwork can be defined as:

A dynamic process involving two or more health professionals with complementary

background and skills, sharing common health goals and exercising concerted physical

and mental effort in assessing, planning, or evaluating patient care. This is accomplished

through interdependent collaboration, open communication and shared decision-making.

This in turn generates value-added patient, organizational, and staff outcomes. (p.238)

For the purpose of this study, a team will include greater than two people who are

working together towards the common goal of providing excellent patient care on a particular

patient care unit. Also, because the Nursing Teamwork Survey asks participants which role they

fulfill within that team, it will be assumed that each team member has a knowledge and

understanding of their own role and the role of others on the team. Therefore, teamwork will be

the work done by each team member, in collaboration with the other members, in order to

achieve the goal of safe and effective patient care.

Barriers and Facilitators to Teamwork within Patient Care Teams

Many elements have been suggested in the research that may have an impact on

teamwork within patient care teams. Kalisch and Lee (2010) suggested that adequate staffing

was essential in order for teamwork to occur, in addition, the researchers demonstrated that an

increase in the number of RNs working on a patient care team will likely result in an increase in

teamwork.

Participants who worked the night shift rated teamwork higher than on other shifts, and it

was suggested that this may be associated with the smaller team size (Kalisch & Lee, 2009). A

smaller team may permit team members to interact with each other more frequently than if there

were more staff available. For this reason, it may also necessitate that staff assist and work with

each other more often. This may help to develop a familiarity and comfort level working with the same small group.

Kalisch and Lee (2011) found that teamwork is more challenging to accomplish in larger hospitals. This may suggest a more challenging work environment with many different patient care units and ways of working among various individuals. Interestingly, Kalisch and Lee (2009) found that males often had lower teamwork scores, specifically in terms of shared mental models; this might be related to the low proportion of males working in nursing. In the same study, both senior staff and the new graduate staff members reported higher levels of teamwork than any other group. The high rating by the senior staff can certainly be explained by their years of experience both in the clinical setting and with their colleagues, while the high teamwork levels reported by the new staff may be explained by being involved in an orientation and mentorship period (Kalisch & Lee, 2009). A larger number of team members may also have a negative impact on how staff members perceive the teamwork, or lack thereof, on their unit (Kalisch & Lee, 2010).

The variations in individual attitudes and beliefs towards teamwork may also impact how each team member contributes to and participates in teamwork (Nelsey & Brownie, 2012). Each member of the team will have varying educational and work-related experiences with teamwork that will influence their perception about whether they view teamwork positively or negatively.

Conceptual Definitions

The following section will define the variables identified for the purpose of this study, teamwork and staffing, and the concepts surrounding them in order to develop an understanding of the concepts and conceptual framework chosen to guide the study.

In a qualitative study about teamwork, researchers developed an understanding of how the Salas framework for teamwork may be applicable to nursing teamwork (Kalisch, Weaver, & Salas, 2009).

The Nursing Teamwork Survey was developed based on the concepts included in the Salas Framework (Kalisch et al., 2010b). This conceptual framework, the "Big Five" in teamwork, was developed by Salas et al. (2005), and its foundations are rooted in psychology. The framework includes five core components: team leadership, mutual performance monitoring, backup behaviour, adaptability, and team orientation, along with three additional factors: shared mental models, mutual trust, and closed loop coordination (Salas et al., 2005). While the original framework is not based in nursing, it provides a framework that describes the concepts of interest in the current study. The concepts identified by the Salas framework will be briefly defined in the following section as this is the framework that guided the research study.

The "Big Five" Framework of Teamwork

In order for teamwork to be effective, it is necessary that all of the key concepts and coordinating mechanisms from the "Big Five" framework are evident and are occurring concurrently. Kalisch et al. (2010b) provided some examples of these connections in their discussion of this conceptual framework. If members of a team possess the ability to adapt to the circumstances and situations of the work environment, they will also likely be capable of monitoring the performance of others, consequently providing them with backup when necessary

(Kalisch et al., 2010b). Though based on a different framework, Leonard et al. (2004) support

the importance and relevance of the concepts of communication and teamwork identified by the

Salas framework. For example, they suggest that quality communication among team members

will result in a team having a shared mental model (Leonard et al., 2004). Essentially, effective

communication between team members will allow the team to develop a mutual understanding

of how the team should function in order to optimize effectiveness.

Below is a visual depiction of how the five key concepts and three coordinating

mechanisms interact in order to allow for effective teamwork and team functioning (Figure 1)

(Salas et al., 2005). Kalisch & Lee (2013) were able to describe the model by saying "when staff

members are so busy, they cannot take the time to monitor and back one another up, provide

leadership to team members, and develop shared mental models (SMMs); teamwork is less likely

to occur" (p. 6).
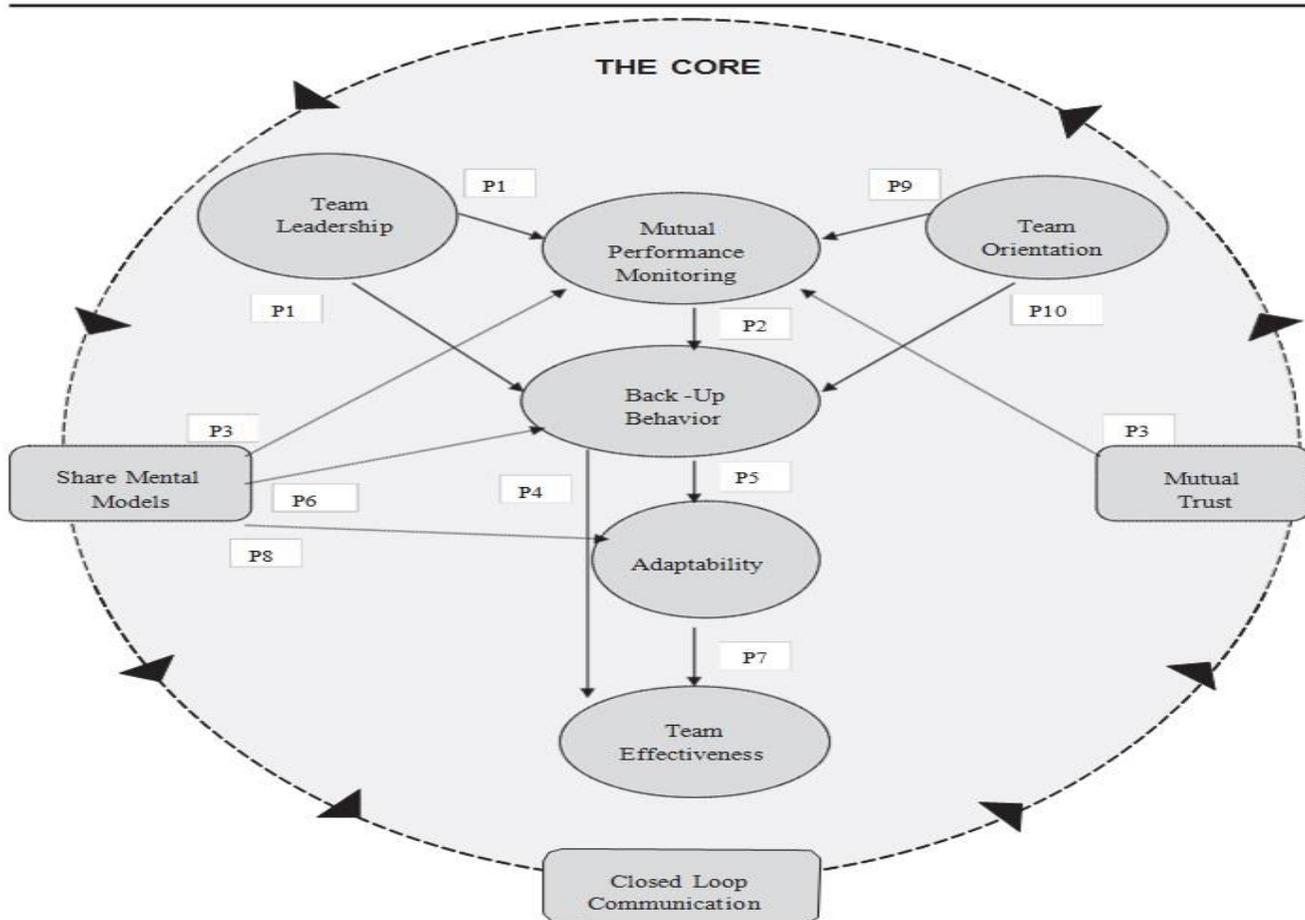
THE CORE

Figure 1: Graphical Representation of High-Level Relationship Among the Big Five and the Coordinating Mechanisms Including Research Propositions

Figure 1. The "Big Five in Teamwork" conceptual framework. This figure illustrates the correlations between the core components and the coordinating mechanisms.

Team Leadership. Salas et al. (2005) defined team leadership as having a dedicated person who possesses the skill and knowledge to facilitate effective functioning of the team by encouraging team members to engage in teamwork, ensuring each member of the team understands and performs their role, and providing a work environment that is conducive to working on a team. The importance of having a leader who is capable of overseeing all of these tasks should not be underestimated (Kalisch & Lee, 2010). Having a charge nurse or unit leader willing and able to help all team members and willing to provide assistance when required is

important to ensuring the team is able to work together towards their goal. A person in a leadership position, such as a manager, must set a positive precedence for members of the team to follow (Nelsey & Brownie, 2012).

Kalisch, Weaver, & Salas (2009) conducted a study where the participants in the study identified the importance of the manager's leadership style as being essential for team function. On a patient care unit, there might be more than one person in a leadership role, for example, a manager and a unit leader or desk nurse. Each patient care unit will likely have at least one designated leader according to their care structure.

Mutual Performance Monitoring. The capacity to be aware of each team member and how they are functioning in their role is part of mutual performance monitoring, according to Salas et al. (2005). This concept encourages team members to approach their teammates if a problem arises or mistake occurs, and requires open communication among the team. The concept of mutual performance monitoring involves team members performing tasks within their role while being cognizant of what is occurring around them in their work environment with their teammates and their patients (Kalisch et al., 2010b).

Backup Behaviour. This concept is simply assisting teammates with assigned tasks if an individual's workload becomes too great for one team member (Kalisch et al., 2010). In nursing, this would include assisting with patient care treatments in order to ensure optimal patient care for the entire patient population on the unit. Kalisch and Lee (2011) found a correlation between an adequate staffing level and increased back up behaviour. This statement seems intuitive because the availability of staff to assist one another, and be aware of what is happening on the floor, may lead to a higher level of teamwork.

This concept of backup behaviour refers to ideas such as team members being aware of other team members who may be behind in their work and providing assistance without having to be asked (Kalisch et al., 2010b). The importance of team member awareness about the responsibilities of other team members should not be underestimated (Salas et al., 2005).

Adaptability. Adaptability is essential for work on a nursing team because variations in the work environment are constantly occurring in terms of patient acuity and workload (Kalisch et al., 2010b). Each team member must be flexible and be able to respond quickly as situations change or arise (Salas et al., 2005). Equally important is the willingness of each individual team member to adapt to changes without question or complaint.

Team Orientation. It is important for the individual members of the team be mindful of the objectives and workload of the entire team, as opposed to just their goals or needs (Salas et al., 2005). Team orientation can increase the connections between and understanding among members of the team (Kalisch et al., 2010). This concept also encompasses whether team members are working well together and whether the team members understand their roles and responsibilities in relation to the other team members.

Shared Mental Models (SMM). Salas et al. (2005) defined shared mental models as the manner in which team members work together and the ability of each team member to be aware of what is required from their role in order to work effectively as a team. Simply stated, shared mental models address whether or not team members are on the same page. When looking at the overall goal of providing effective patient care to all patients on a unit, this is an important concept to consider because it encompasses team members being mindful of each other and communicating with each other about expectations and goals.

The use of SMM among team members is related to adequate staffing and a high ratio of RN staff on a patient care unit (Kalisch & Lee, 2011). For the purpose of this study, SMM refers to the team members having an awareness of what needs to be accomplished on the unit and how they can work together to do so (Salas et al., 2005).

Ferguson (2008) emphasizes the importance of communication among team members to ensure that everyone on the team has the same perception and ideas about a particular situation.

Closed-Loop Communication. Closed-loop communication is an effective means of communication between two team members where each member will acknowledge that the message was properly delivered and received (Salas, et al., 2005; Kalisch et al., 2010b). This concept will facilitate effective teamwork by promoting discussion and feedback amongst the team.

Purdy et al. (2010) found that nurses rated communication as one of the most important team processes. The importance of communication is illustrated by Leonard et al. (2004) with their statement that poor communication can be one of the major causes of negative patient outcomes. The importance of communication among all team members should not be underestimated. Nelsey & Brownie (2012) assert that communication is essential for teamwork to occur successfully.

Mutual Trust. Refers to the necessity for each member to fulfill their assigned roles for the team and the patients they are caring for (Salas et al., 2005). This concept is important for each team member to be confident that they are working on a team where everyone is competent and willing to work towards the common team goals (Kalisch et al., 2010b).

Adequate Staffing

Adequate staffing is one of the many variables in the nursing work environment that can have a direct effect on the quality of patient care (Hinno et al., 2011). This is one of the variables explored in the NTS (Kalisch et al., 2010b). This variable is addressed in the second research question in this study to determine the relationship between the level of teamwork and the perception of staffing on a patient care unit.

Staffing can be examined using a number of variables. Kalisch and Lee (2011) utilized three measurements for this concept: (a) hours per patient day, (b) RN hours per patient day, and (c) the skill mix of the staff members on the unit. Furthermore, the same study found a positive correlation between those three indicators and an increased level of teamwork. While measures of staffing exist, there is always the potential that individual staff members will perceive staffing levels as more or less adequate. In other words, categorizing staffing as adequate or inadequate is subjective (Unruh, 2008). Tervo-Heikkinen, Kiviniemi, Partanen and Vehvilainen-Julkunen (2009) measured staffing by asking participants the actual number of patients cared for on the previous shift. Another means of measuring staffing is to look at the actual staffing data from the patient care unit or healthcare facility in question.

A nursing unit where staff perceived increased staff levels may also experience increased job satisfaction (Kalisch et al., 2010a). Kalisch and Lee (2009) found that when staff members reported full staff complements, they had higher teamwork scores as compared to those who believed the staffing of their units to be inadequate. The same study revealed that a smaller patient workload was associated with higher levels of teamwork.

Purdy et al. (2010) identified staffing as being a key predictive indicator for risk for falls. Mark (2002) contends that patient acuity may be determining nurse perception about staffing.

Units that are adequately staffed may also have more positive patient outcomes and less risk for negative outcomes. Similarly, an appropriate staff to patient ratio according to the acuity of the patient care unit and the workload may affect the perception of staffing.

Raikkonen, Perala and Kahanpaa (2007) found that adequate staffing was in fact a requirement for developing quality patient care. The survey participants who rated staffing favourably tended to rate their skills as being better and subsequently perceived the care in their facility to be of higher quality. Furthermore, Zhu et al. (2012) found that higher nursing to patient care ratios resulted in enhanced patient outcomes.

The state of California enacted a mandatory nurse-patient staffing ratio in 2004 (Aiken et al., 2010). The implementation of this strategy has improved patient outcomes and increased job satisfaction. There are a number of reasons the implementation of a mandatory staffing ratio is significant, including that it can decrease burnout while increasing job satisfaction. Research suggests that a higher ratio of RNs has a positive impact on patient outcomes (Aiken et al., 2010).

Teamwork and Staffing

Based on the last shift worked, staff who reported higher levels of staffing also perceived higher levels of teamwork occurring on their unit (Kalisch & Lee, 2011). Using the NTS, Kalisch and Lee (2009) found that there were lower levels of teamwork among participants who worked during the day or rotating shifts.

In a qualitative study by Thomas, Sherwood, Mulhollem, Sexton and Helmreich (2004), staff from a large NICU identified the importance of being familiar with each other, as a result of working together on the same unit for long periods of time, in order to be comfortable with

knowing the other team members and how they work. This highlights the significance of having consistent staffing on any patient care unit.

Siassakos et al. (2011) suggested that effective teamwork may in fact offset some of the negative perceptions about staffing by team members. Therefore, finding ways to improve the work environment on a nursing unit may improve the way some of the work environment characteristics, such as staffing adequacy, are perceived by staff members. These findings may apply to the clinical areas chosen for the study and provide some insight into the relationship between staffing and teamwork.

The conceptual framework presented identified the concepts of interest in the current study. There are many concepts that play a role in how effective teamwork occurs among a team of people, and determine the effectiveness of that team. In the next chapter, the methods will be presented as proposed to address the problem and questions under study.

Chapter III

Statement of Purpose of the Study

The purpose of this study was to determine the perceived level of nursing teamwork by patient care teams, in an acute care hospital. The study also determined if a relationship existed between participant perception of both staffing and teamwork.

Research Questions

The research questions used to guide the research study were:

1. What is the level of nursing teamwork on each patient care unit of a hospital?

2. Does a relationship exist between the perception of the level of staffing and the level of nursing teamwork?

Research Design

The research study was conducted using a quantitative descriptive cross-sectional research design.

Setting

The North Bay Regional Health Centre (NBRHC) in Northern Ontario, Canada was the site selected for data collection. The NBRHC is a new 420 bed healthcare facility, providing both acute care and mental health care services. After merging three sites in January 2011, the NBRHC is a unique, urban hospital in that it combines both acute care and mental health facilities in one city, at one location, providing optimal services to clients, families, and the community. It is one of four large health care facilities in North Eastern Ontario.

Sample

The sample included RNs, registered practical nurses (RPN), personal support workers (PSW), and unit clerks (UC) working on the following units: ER (Emergency), CCU (Critical Care Unit), Inpatient Surgery, Inpatient Medicine, Complex Continuing Care and Rehab, Paediatrics, NICU (Neonatal Intensive Care Unit), OR (Operating Room), AIPU (Acute Inpatient Psychiatry Unit), ACU (Ambulatory Care Unit), PACU (Post-Anaesthesia Care Unit)/Day Surgery, and Labour & Delivery. When considering nursing or patient care teams, the research tends to include only RN and RPN staff, often failing to recognize personal support workers and unit clerks, as are included in this research study.

It should be noted that not all of these patient care units employ staff in all four roles (for example, the NICU and OR do not employ PSWs). However, the majority of these clinical areas employ individuals working in at least three of the four roles. The various team structures represent the differing tasks, demands, patient care, and goals of each unit. Six hundred staff members from these patient care units were targeted for participation in the study.

Inclusion and Exclusion Criteria

All RN, RPN, PSW, and UC staff members from the patient care units were included in the sample for the study. Because they are also nursing staff, the nurse clinicians and managers of each patient care unit were invited to participate in the survey. Other members of the interdisciplinary team who worked on the units (for example, physiotherapy, occupational therapy, dietary, environmental services and physicians) were excluded.

Both male and female employees were included, with no age restriction. The NBRHC employees in the four targeted roles were at least 18 years of age and able to consent to participation.

Recruitment

Following the suggestion of the Research Ethics Board (REB) at the NBRHC, an email was sent to the eleven managers of all of the patient care units being considered for participation in the study. The email was sent with the sole purpose of informing the managers of the intention of the researcher to conduct the current study, to invite their staff members to participate in the research, as well as provide a brief description of the study. Seven of the eleven managers replied to the email indicating they would support the research, and no emails were received suggesting that there was opposition to the study.

In January 2013, 600 eligible participants were sent an email invitation through the hospital intranet email system (Appendix B). A clear message was provided to all invited staff that participation in the survey was completely voluntary and that there would be no consequences for not participating in the survey.

An envelope with vouchers for a beverage of choice from the hospital food and beverage vender was provided as an incentive to each unit to be distributed to staff members. Envelopes, with a sufficient number of vouchers for each employee, were provided to the manager on each unit with a brief letter requesting that the vouchers be placed in a location where each of the employees on the patient care unit would have access. This information was also included in the initial invitation email sent to all staff members invited to participate in the survey. All invitees were welcome to take a voucher regardless of whether or not they chose to participate in the survey.

Variables

The variables considered in this study are the patient care unit, the level of teamwork (as measured by the NTS), and the perception of staffing adequacy (measured by questions sixteen in the demographic section of the NTS).

The rationale for including patient care unit as a variable is that it allows the researcher to make comparisons between the other variables and various patient care teams. For the purpose of this research, adequate staffing was determined according to question 16 included in the demographic question section of the NTS (Kalisch, Lee, & Salas, 2010). This question gathered information about how often the participant perceives their unit to be adequately staffed. No additional staffing data was collected for this study.

The rationale for including RNs, RPNs, UCs, and PSWs stemmed from the definition of nursing team according to the development of the NTS (Kalisch, Lee, & Salas, 2010). This follows the idea that these four groups are the most consistent staff members working on a patient care unit at any given time. This means that the patient care unit on which each staff member works unit on which they most often work, and they remain on that unit for full shifts. They do not rotate through various units for short periods of time doing consultations, as would physicians, physiotherapists, or dieticians, for example. It is noted that while PSWs and UCs are not nursing staff, they play an important role on the patient care team as a whole (Kalisch, Lee, & Salas, 2010). Furthermore, each of these groups of staff members brings a unique skill set and experience to the team. Therefore, for the purpose of this study, the "nursing" team was termed the "patient care team" to indicate that all four of the groups of staff members played an equally important role in facilitating quality, safe patient care in their respective units.

Instrument

For data collection, the NTS was chosen to address the questions and purpose of the

study (Kalisch, Lee, & Salas, 2010) (Appendix A). Permission was obtained via email

communication from the authors to use the instrument. Permission was obtained from the

developers of the NTS to alter the wording slightly, for some questions, in order to more closely

align with Canadian wording, as the tool was developed in the United States. For example,

Registered Practical Nurse diploma instead of Licensed Practical Nurse diploma, and utilizing

the term Personal Support Worker instead of Nursing Assistant. These minor changes were

made in order to ensure a clear understanding of each question by participants, and in order to

give an accurate representation of the terminology used in a northern Ontario acute care hospital.

The NTS, an existing tool in the literature, was chosen for this study for a number of

reasons (Kalisch, & Lee, 2011). It was considered applicable to this study because of its design

to measure teamwork as it occurs specifically in inpatient hospital settings. The aim of using a

survey to collect data was to gain insight into the topic of nursing teamwork and explore

participant perceptions.

According to Kalisch et al. (2010), the survey was straight-forward and relatively easy to

use for participants. With the assumption that the majority of staff invited to participate in the

study would have completed at least a high school degree, the survey seemed appropriate for that

level of education. As well, the survey was considered fairly brief, taking about 15 minutes to

complete, and this was an important consideration for the target population. Furthermore, the

survey was recently developed and was found to have strong psychometric properties (Kalisch et

al., 2010). The NTS was also closely aligned with the research questions developed, and the

sample and setting chosen, for the current study. The NTS focused specifically on nursing or

patient care teams, which allowed for a better understanding of team functioning on each patient care units, as well as comparison between various units. While other surveys and instruments exist about teamwork in the health care literature, they tend to focus on interprofessional or multidisciplinary teamwork.

The NTS is comprised of 20 demographic questions and 33 items (Kalisch et al., 2010). The majority of the questions are multiple choice questions and Likert scales where one represents rarely and five represent always (Kalisch & Lee, 2009).

The NTS was developed based on the teamwork framework by Salas, Sims, & Burke (2005). Focus groups were also conducted in the early stages of development. After expert review of the original 74 questions, a survey consisting of 45 questions was trialled with a sample population of 1758 (Kalisch, Lee, & Salas, 2010). Following the analysis of the survey and the questions, a 33-item questionnaire was finalized. Exploratory factor analysis and confirmatory factor analysis were used to eliminate twelve items from the original instrument (Kalisch, Lee, & Salas, 2010). Reynaldo and Santos (1999) suggested this is an appropriate approach for determining any items that do not demonstrate sufficient correlation within the instrument.

From the eight original concepts in the Salas framework, five subscales emerged in the development of the survey tool (Kalisch, Lee, & Salas, 2010). The subscales generated for the final 33 item instrument included: (a) trust (seven items), (b) team orientation (nine items), (c) backup (six items), (d) shared mental model (seven items), and (e) team leadership (four items) (Kalisch et al., 2010). Team orientation, backup, and team leadership are three of the five major components of the "Big Five" framework while, trust, and shared mental model are two of the three co-ordinating mechanisms (Salas, Sims, & Burke, 2005).

The total scores of the NTS may be analyzed for each participant, as well as each individual subscale. Higher scores on the NTS indicate perceived higher levels of teamwork on the patient care unit, while lower scores indicates a perception of lower levels of teamwork occurring on the unit. If scores for the variable teamwork are higher, there is indication of more trust among staff members, more team orientation, more backup behaviour, more SMM and higher quality of leadership on the patient care team (Kalisch et al., 2010).

Kalisch, Lee, & Salas (2010) provided descriptions of what each subscale of the NTS is meant to measure. They suggested the trust subscale identifies whether team members value the opinions and suggestions of others, and willingness to share information with each other. Team orientation seeks to provide information about how the team functions and whether or not the members choose to help each other to improve. The backup questions are about the ability of team members to be aware of when others require assistance with their workload and their readiness to provide assistance. Shared mental model items address the issue of whether or not each member of the team understands their role within the team, as well as the role of others, and how they can collaborate to achieve the mutual goal. The team leadership questions identify the importance of having excellent team leaders and how they can positively impact the work the team performs and the willingness to assist with that work when necessary. The operational definitions of each of these concepts for the purpose of the NTS are very similar to the conceptual definitions presented in the Salas "Big Five" in Teamwork (Salas, Sims, & Burke, 2005).

Using the test-retest method, the reliability of the NTS was demonstrated with a test-retest coefficient of .92 (Kalisch et al., 2010). Each of the five subscales on the NTS had a reliability coefficient within the range of .77-.87 (Kalisch & Lee, 2010). The internal

consistency was also tested and the Cronbach alpha coefficient for the NTS survey as a whole was .94, which the authors suggested demonstrates good reliability (Kalisch et al., 2010). According to Reynaldo and Santos (1999), this measure is one of the most commonly used in determining the reliability of an instrument. Furthermore, they stated that a greater Cronbach alpha coefficient, ranging from 0-1, means the instrument being tested is more reliable (Reynaldo & Santos, 1999). For each of the subscales, the alpha coefficient was in the range of .74-.85; trust was .847, team orientation was .831, backup was .841, SMM was .834, and team leadership was .744 (Kalisch & Lee, 2010). These tools allowed the survey developers to conclude that participants who responded from the same patient care unit would likely have many of the same responses, while participants from other patient care units would have different responses (Kalisch & Lee, 2010). After determining that the survey had strong psychometric properties, the developers determined that the NTS could be used to compare teamwork and functioning among and between various patient care teams (Kalisch et al., 2010).

The demographic items included in the NTS, particularly question 16, addressed the question surrounding adequate staffing. Exploration of the remaining demographic questions was conducted in order to identify any characteristics that may have an impact on nursing teamwork. The demographic questions included on the NTS included items about: (a) education, (b) role, (c) gender, (d) age, (e) experience, (f) patient care unit, (g) hours and shifts, (h) overtime and absences, (i) satisfaction with role, (j) position, and (k) teamwork (Kalisch et al., 2010).

Method

Ethical approval was obtained from the Laurentian University Research Ethics Board (REB) in early Fall 2012. The application for the ethical review was then submitted to the REB at the NBRHC. After submitting the suggested revisions and answering some of the questions posed by the REB, ethical approval was obtained in November 2012 to conduct the research study at the NBRHC.

Data Collection. Data collection was completed during a five week period from January to February 2013 at the NBRHC. The hospital email system at the North Bay Regional Health Centre was used to send email invitations to the staff members working on the chosen patient care units. Because the researcher is an employee at the facility, access to the hospital intranet email system was available.

Data collection was completed using FluidSurvey, an online survey tool (www.fluidsurveys.com). This system was chosen because it allows for anonymity of participants. Other than any demographic information the participant chooses to share through answering the questions on the survey, there was no demographic or additional information collected from participants when the survey is completed. The site also guaranteed that any data collected was for the sole use of the person collecting the data, and would not be accessed or utilized by the website or other outside groups or sources.

The email invitation included details and a clear description about the research study and the instrument being used for data collection (Appendix B). Implied consent was requested as participants were asked to click the link to FluidSurvey if they wished to participate. Because the survey was administered strictly online, with no paper copies provided, no written consent was obtained. The email clearly explained to potential participants that if they chose to begin the

survey and not complete it or skip one or more questions, there would be no consequence. Furthermore, the participants who chose to participate in the survey were informed that if they chose to complete the survey, partially or completely, they would not be able to withdraw due to the lack of identifying information attached to the response of each participant.

A reminder email was sent with a brief summary of the research study and link to the survey tool at one week, two weeks, and four weeks after the initial invitation was sent out (Appendix C). At the five week mark, the survey was closed.

There was no identifying data collected from participants, thus ensuring anonymity and confidentiality. Some demographic information was collected using the questions from the NTS. This information is provided in the results section.

Data Management. The original data was stored on the FluidSurvey database. This ensured that an original copy is always available and accessible by only researcher, through the use of a password-protected login. Once data collection was completed, the initial data files were downloaded from FluidSurvey onto the researcher's home computer and saved onto a password protected external hard-drive and USB memory stick. Data was opened only on the researcher's home computer and in the graduate computer lab at Laurentian University. No copies of the original raw data were printed on hard-copy.

As per the request of the NBRHC REB, the raw data will be stored for a minimum of five years in a secure and private location, and then destroyed or deleted as appropriate after that time. At that time, any digital files will also be deleted.

To maintain the anonymity of the participants, only the general results from the research will be shared with the staff members who were invited to participate in the research.

Data Entry and Cleaning. The initial data was entered into the SPSS (Statistical Package for the Social Sciences) program. All of the survey responses were included, even if they survey was not 100% complete. Any missing data, where a participant had omitted a response in the demographic section questions, was coded as 999 to ensure proper data entry.

Analysis. The means and frequencies of the demographic data and survey questions were conducted. The Shapiro Wilk t-test for normality was conducted for the data, and it was found that the data were not normally distributed. The Mann Whitney U test and cross tabulation tests for association were used for further analysis of the data.

Chapter IV

Results

Power Analysis

A power analysis was completed and resulted in a beta value of 0.90.

Reliability

Based on the results from this study, the internal consistency of the NTS is Cronbach alpha .828. The alpha Cronbach is a coefficient measuring the reliability of the survey. The alpha coefficient from the original testing of the NTS was found to be .94 (Kalisch et al., 2010).

Demographics/Participant Information

Between January 24, 2013 and February 28, 2013, the NTS was completed by 200 staff members at the NBRHC, representing a 33% response rate. All partially-completed and completed surveys were included in the results. There were at least four respondents from each of the units who were invited to participate.

The respondents reported working on a variety of patient care units. Of the 200 participants, 178 were female, 16 were male, and six chose not to disclose their gender. The study sample is highlighted in tables provided below.

Table 1 shows the percentages of respondents working on each patient care unit. The majority of respondents (97%) reported working on these units the majority of the time. Less than 5% responded not spending the majority of the time working on the unit they identified on the survey.

Table 1

Usual Patient Care Unit

Unit	Percentages
Emergency	7.5%
Critical Care Unit	3.5%
Inpatient Surgery	19.5%
Inpatient Medicine	15.5%
Complex Continuing Care and Rehab	11%
Paediatrics	4.5%
Neonatal Intensive Care Unit	3%
Operating Room	6.5%
Acute Inpatient Psychiatry Unit	13.5%
Post-Anaesthesia Care Unit/Day Surgery/Ambulatory Care Unit	10%
Labour & Delivery	5%
Missing	0.5%
Total	**100%**

In table 2, percentages of participants by age group are presented. The demographic survey includes six age categories, with the last being >65 years old. However, because of low response rates in that category, it was grouped with the 55-64 years old category to create a category of participants >55 years old.

Table 2

Age

Age	Frequencies	Percentages
<25 years old	28	14.6%
25-34 years old	53	27.6%
35-44 years old	39	20.3%
45-54 years old	43	22.4%
>55 years old	29	15.1%
Total	**192**	**100%**

The information provided in the tables below provides frequency data for education level of all participants (Table 3) and degree obtained when the participant was a nurse (Table 4).

Table 3

Education Level

Highest Education Level	Frequencies	Percentages (%)
Grade School	0	0
High School Graduate (or GED)	7	3.6
College Diploma	118	60.2
University Degree	66	33.7
Graduate Degree	5	2.5
Total	**196**	**100**

Table 4

Highest Degree for Nursing Staff

Highest Degree for Nursing Staff	Frequencies	Percentages (%)
RPN Diploma	48	28.2
RN Diploma	56	32.9
Bachelor of Science in Nursing (BScN)	60	35.3
Bachelor Degree Outside of Nursing	2	1.2
Master's of Science in Nursing or Higher	4	2.4
Master's Degree or Higher Outside of Nursing	0	0
Total	**170**	**100**

The majority of participants, 60.2%, reported having a college diploma; 28.2% reported having a RPN diploma and 32.9% reported having a RN diploma. A small percentage of participants reported being a high school graduate at 3.6%. Another small percentage (2.5%) of the participants reported obtaining a graduate degree such as a master's of science in nursing degree or higher. One third of participants reported having a university degree. Of the nursing staff, 35.3% reported having a bachelor of science in nursing (BScN) degree, while 1.2% reported having a bachelor's degree outside of nursing.

Table 5 provides data about the participant population working in each of the four defined roles, as well as any respondents working in additional patient care unit roles such as the nurse clinicians and unit managers.

Table 5

Job Title/Role

Job Title/Role	Frequencies	Percentages
Registered Nurse (RN)	102	53.4%
Registered Practical Nurse (RPN)	46	24.1%
Unit Clerk (UC)	15	7.9%
Personal Support Worker (PSW)	10	5.2%
Other (including nurse clinicians and managers)	18	9.4%
Total	**191**	**100%**

A small percentage (16.7%) of respondents worked less than 30 hours in a week, while the remaining 83.3% worked greater than 30 hours in a week. Over half worked shifts rotating between days, evenings, and nights, while 38.2% reported working strictly day shift, 1.6% reported working only evening shift, and 6.3% reported working only night shift.

Table 6 provides information about the amount of time each participant has spent working in current role and unit.

Table 6

Experience Working in Current Role and on Current Unit

Experience	Current Role		Current Unit	
	Frequencies	Percentages	Frequencies	Percentages
Up to 6 months	5	2.7%	11	5.9%
Greater than 6 months to 2 years	33	17.6%	38	20.4%
Greater than 2 years to 5 years	26	13.8%	37	19.9%
Greater than 5 years to 10 years	42	22.3%	36	19.4%
Greater than 10 years	82	43.6%	64	34.4%
Total	**188**	**100%**	**186**	**100%**

The usual length of shift worked by participants is provided in Table 7. Less than half of participants, 42.6%, reported working greater than 12 hours of overtime in the previous three months, while 35.6% reported working 1-12 hours of overtime, and 21.8% reported working no overtime in the previous three months.

Table 7

Usual Shift

Shift	Frequencies	Percentages
8 hour shift	11	33%
10 hour shift	38	0.5%
12 hour shift	37	61.9%
8 and 12 hour rotating shift	36	4.2%
Other	64	0%
Total	**186**	**100%**

Table 8 provides frequencies and percentages of participants who have missed worked due to illness, injury, or the need for additional rest.

Table 8

Missed Work (due to Illness, Injury, Extra Rest)

Missed Work	Frequencies	Percentages
None		41%
1 day or shift		23.9%
2-3 days or shifts		27.1%
4-6 days or shifts		3.7%
Over 6 days or shifts		4.3%
Total		**100%**

Table 9 presents data for the percentages of participants who declared an intention to leave their current position in the future.

Table 9

Intent to Leave Current Position

Leave	Percentages
In the next six months	7.5%
In the next year	81.9%
No plans within the next year	10.6%
Total	**100%**

Table 10 presents the frequencies and percentages of shifts during which participants

perceived the unit they work on to be adequately staffed.

Table 10

Unit is Adequately Staffed

Adequate Unit Staffing	Frequencies	Percentages
100% of the time	3	1.6%
75% of the time	103	55.1%
50% of the time	46	24.6%
25% of the time	23	12.3%
0% of the time	12	6.4%
Total	**187**	**100%**

When asked about their current or last shift, the majority of participants reported caring

for three to seven patients on their previous shift, with the responses ranging from 0 to 50. The

majority of respondents answered that they had 0 to 2 patient admissions, with responses ranging

from 0 to 150. The number of patient discharged ranged from 0-40, with the majority

responding that they had 0 to 2 discharges. The wide range of responses for number of patients

cared for likely indicates participants working in an area of high admission or triage (for example

in the ER), or perhaps PSWs or UCs who are caring for an entire patient care unit in their role.

Research Question #1. The total scores for the NTS from each patient care unit are presented in Table 9 below. The 33 NTS questions were scored using a five-point Likert scale, where the lowest possible score was 33 and the highest possible score was 165. For the trust subscale, the scores range from five-35. For the team orientation subscale, the scores range from five-45. For the backup subscale, the scores range from five-30. For the shared mental model subscale, the scores range from five-35. For the team leadership subscale, the scores range from five-20.

There were 130 participants who completed the NTS in full, with the remainder having at least one piece of missing or incomplete data. The total scores from the completed surveys ranged from 80-135, with a mean of 114.3, the data is presented in Table 11.

Table 11

NTS Score by Patient Care Unit

Work Unit	Mean Total Scores
ER	117
CCU	127.7
Inpatient Surgery	107.5
Inpatient Medicine	115
Complex Continuing Care and Rehab	114.1
Paediatrics	118.3
NICU	122.7
OR	114
AIPU	114.5
PACU/Day Surgery	118.8
Labour and Delivery	121
Mean Score for Entire Sample	**114.3**

Table 12 provides the mean and maximum scores for each of the five subscales included in the NTS.

Table 12

NTS Subscale Scores

Subscale	Means	Maximum Scores
Trust	24.9	35
Team Orientation	24.7	45
Backup	22.5	30
Shared Mental Models	28.3	35
Team Leadership	15.2	20

When comparing the total scores on the NTS, participants from inpatient surgery were found to have the lowest mean scores, suggesting lower levels of teamwork. The respondents from the inpatient surgical unit also had the lowest scores on the SMM, team leadership, and backup subscales, and the second lowest score on the trust subscale. The participants from the critical care unit had the highest overall scores on the NTS. The scores for the subscales for each patient care unit are provided in Table 13.

Table 13

Comparison of Mean Subscale Scores from the NTS for each Patient Care Unit

Patient Care Unit	Trust	Team Orientation	Shared Mental Models	Team Leadership	Backup
Inpatient Surgery	22.5	25.9	26.1	13.1	20.0
ER	26.3	21	29.5	15.3	23.4
CCU	26.6	22.7	30.2	17.2	25.6
Inpatient Medicine	24.8	24.7	28.7	15.3	21.4
Complex Continuing Care and Rehab	24.4	24.1	28.4	14.2	22.6
Paediatrics	26.1	24.7	29.9	14.4	23.1
NICU	30.3	18	31.2	18.1	26.5
OR	22.4	27.9	27.2	16.7	22.2
AIPU	23.1	29.1	26.0	15.1	21.4
PACU/Day Surgery	28.2	19.1	31.5	17.6	26.0
Labour & Delivery	26.9	19.8	29.4	16.1	24.6
Total	**24.9**	**24.7**	**28.3**	**15.2**	**22.5**

Because of the differences found between the NTS total scores and subscale scores between the inpatient surgical unit and the other patient care units, the data for inpatient surgery was further compared with a new category which included all of the other units. Shapiro Wilk t-tests for normality of the data were conducted. Since the data were not normally distributed, the Mann Whitney U statistical test was used for the analysis. Because of the nature of this study, which is comparing the scores of the NTS among various patient care units, it is not necessarily expected that the data would be normally distributed. As mentioned above, there is a wide range of overall scores on the NTS from the results of this study. This range of scores reflects the fact that the NTS seeks to address the opinions and perceptions of the participants, and that there were no specific expectations as to what the responses may have been. Furthermore, it was not essential that the data be normally distributed for the purpose of the statistics of the study. Because the ACU had only four respondents (they are the smallest unit invited to participate), they were included with the PACU/Day Surgery unit for a total of 20 respondents in this category. Therefore, a total of 11 units will be used in the comparison of the data. The participants from the inpatient surgical units had significantly lower scores on the NTS. In order to explore these differences, the inpatient surgical unit was compared with a grouping of all other units. The purpose of this comparison was to explore which of the demographic characteristics might have had an influence on the total scores for the inpatient surgical unit.

A Mann-Whitney U test for association was conducted between two variables, age and patient care unit. The inpatient surgical unit was compared with the other patient care units. This comparison determined a significant association between these variables, with $x^2(1)=19.301$, $p=.002$. The staff on the inpatient surgical units were significantly younger than the participants from other units ($\varphi=.317$, $p=.002$). On the inpatient surgical unit, one-third

(35.9%) of participants responded that they were under the age of 25, and almost 80% responded

that they were under the age of 45. On the remainder of the patient care units, 41.8% of

participants responded as being over the age of 45. These values are provided below in Table

14.

Table 14

Percentage of Participants in each Age Category and Patient Care Unit

Unit	Under 25 years old	25-34 years old	35-44 years old	45-54 years old	55-64 years old	Over 65 years old
Inpatient Surgery	35.9%	25.6%	17.9%	12.8%	7.7%	0.0%
All other units	9.2%	28.1%	20.9%	24.8%	16.3%	0.7%

A Mann-Whitney U test was run to determine if there were differences in role experience

between participants on the inpatient surgical units compared to the remaining units.

Distributions of role experience were not similar, as assessed by visual exception. Role

experiences scores for the inpatient surgical units (mean rank = 65.88) were significantly lower

than for the remainder of the units (mean rank = 101.99), U=1,789, z=-3.833, p=.001. The

results showed that 30.8% of participants on inpatient surgery answered that they had six

months-two years of experience working in their role, while 50.3% of participants responding

from other units had greater than 10 years experience in their role. Furthermore, the majority of

participants from inpatient surgery had less than five years experience, while the majority of

their counterparts on other units had greater than five years of experience. The numbers and

percentages of participants' experience in their role are provided in Table 15 below.

Table 15

Comparison of Experience in Role between Inpatient Surgery and all other Patient Care Units

Experience in Role	Unit	Numbers	Percentages
	Inpatient Surgery		
Less than 6 months		2	5.1%
Greater than 6 months to 2 years		12	30.8%
Greater than 2 years to 5 years		8	20.5%
Greater than 5 years to 10 years		10	25.6%
Greater than 10 years		7	17.9%
	All Other Units		
Less than 6 months		3	2.0%
Greater than 6 months to 2 years		21	14.1%
Greater than 2 years to 5 years		18	12.1%
Greater than 5 years to 10 years		32	21.5%
Greater than 10 years		75	50.3%
Total			

A Mann Whitney U test was conducted to determine the difference between role experience for the participants from the inpatient surgical units and the remainder of the patient care units included in the study. Distributions of role experience scores for the inpatient surgical unit and the other patient care units were not similar, as assessed by visual inspection. Role experience scores for the inpatient surgical participants (mean rank = 78.21) were significantly lower than for the remainder of the units (mean rank = 97.56), U=2,270, z= -0.2063, and p=.039.

A cross tabulation test for association was conducted between patient care unit and satisfaction with teamwork. A chi-square test was conducted between patient care unit and satisfaction with teamwork. There was a statistically significant association between patient care unit and satisfaction with teamwork, x^2(1)=10.291, p=.036. Only 18.4% of staff members on inpatient surgery reported being very satisfied, while other units had 31.5% of staff members who were very satisfied with the teamwork on their unit. However, there was not a significant

difference for satisfaction with teamwork between the inpatient surgical units and the remaining

patient care units. The comparison of results is shown below in Table 16.

Table 16

Satisfaction with Level of Teamwork on Unit

Level of Satisfaction	Unit	Number	Percentage
	Inpatient Surgery		
Very dissatisfied		1	2.6%
Dissatisfied		2	5.3%
Neutral		12	31.6%
Satisfied		16	42.1%
Very satisfied		7	18.4%
	All Other Units		
Very dissatisfied		0	0%
Dissatisfied		13	9.1%
Neutral		22	15.4%
Satisfied		63	44.1%
Very satisfied		45	31.4%
Total		**181**	**100%**

A Mann-Whitney U test was run to determine if there was a difference in the intention to

leave the current work unit between the inpatient surgical unit and the remaining patient care

units. Distributions of intention to leaves scores for inpatient surgery and other units were not

similar, as assessed by visual inspection. The participants on the inpatient surgical unit had

significantly higher intentions to leave their unit than the other patient care units. Intention to

leave scores for the inpatient surgical unit (mean rank = 82.55): the other patient care units

(mean rank = 97.62), U=2,439, z= - 2.299, p=.021.

Research Question #2. The variables considered in the second research question were the level of nursing teamwork and the perception of staffing adequacy. No significant association was found between the level of nursing teamwork, as determined by the total scores on the NTS, and the perception of staffing adequacy on the patient care unit on which they were employed, according to the Mann Whitney U test. The majority of participants perceived the unit on which they worked to be adequately staffed at least 75% of the time. Table 17 provides the data for the perception of staffing adequacy for all participants. When questioned about staffing, only 1.6% of participants perceived the patient care unit on which they worked to be adequately staffed 100% of the time. Just over half, 55.1%, of participants perceived their unit to be adequately staffed 75% of the time. Nearly one quarter, 24.6%, perceived the staffing on their unit to be adequate half of the time, while 12.3% perceived their unit to be adequately staffed 25% of the time. A small percentage, 6.4%, perceived that their patient care unit was never adequately staffed.

Table 17

Perception of Staffing Adequacy for all Participants

Perception of % of time unit is adequately staffed	Percentage (%)
0% of the time	6.4
25% of the time	12.3
50% of the time	24.6
75% of the time	55.1
100% of the time	1.6
Total	**100**

Chapter V

Discussion

The numerous benefits of teamwork for both patient care teams and patients cannot be understated in discussing this study. One important reason to enhance teamwork on a patient care unit is to ensure job satisfaction among team members (Kalisch, Lee, & Rochman, 2010), and the positive outcomes for patients should not be underestimated. Clark (2009) suggested that effective teamwork can positively impact the work environment and assist the team in achieving safer patient care. Purdy et al. (2010) found effective teamwork to be a means of achieving quality patient care. These previous studies highlight the important relationship between effective teamwork and quality patient care. It is essential that patient care teams are able to acknowledge and understand the priority goal of providing quality care to each of the patients on their unit.

The skills required for each team member to participate in effective teamwork must be taught and fostered in the context of each patient care unit, and are not necessarily innate skills (Kalisch et al., 2009b). For a team to function effectively, it is important that members are able to identify the strengths and areas for improvement, and work to utilize each other's strengths for the benefit of their patients (Kalisch & Begeny, 2005).

Demographic Characteristics. Participants from all patient care units who were invited to participate responded to the NTS, with a response rate of 33% (N=200). The majority of participants, 97%, identified that they spent most of their time working on the patient care unit which they identified in the first question of the Nursing Teamwork Survey (NTS). This result suggests that, generally, there is consistent staffing on the patient care units surveyed, while some staff members may float to or pick up shifts on other units.

With the exception of a few males, and a few who chose not to disclose their gender, 89% of participants were female. This would be in line with the fact that there are lower numbers of males in nursing, as suggested by Kalisch and Lee (2009). Davies (2013) presented data from a 2010 report from the Canadian Institute for Health Information which found that 5% of the RN workforce in Ontario was male. The Yukon had the highest number of males working in the RN role at 10.4%, and Prince Edward Island had the lowest number of males working in the RN role at 2.4% (Davies, 2013). Chang et al. (2009) found that the majority of their respondents were female.

There was representation in each age group category identified by the NTS. There were a larger number of participants who answered that they were in the younger age groups. The results showed that 42.2% of study participants were 34 years of age or under. In 2012, the CIHI reported that 12.4% of regulated nurses in Ontario were under the age of 30. This suggests a relatively young staff in the current study. The findings of the current study suggest a less experienced staff. With a wide range of age groups represented by the participants, it is likely that there will be various knowledge, skill, and experience in regards to working in a team (Nelsey & Brownie, 2012). This could positively contribute to the team in the sense that all team members are providing different experiences and ideas about teamwork. However, this may also pose a challenge for those who have had negative previous experiences with teamwork or were not educated or encouraged to engage in teamwork as part of their training.

In terms of job role, RNs were well-represented in the sample at 53.4%, as more than half of the participants. In 2011, Kalisch and Lee reported that a team with a higher ratio of RNs would likely have higher scores on the NTS, as well as higher scores on the team leadership subscale. This association seems reasonable when considering that RNs are often expected to

demonstrate and display strong leadership qualities and ability. Strong leadership may have a positive influence on overall teamwork. PSWs represented only 5.2% of the employees who chose to participate in the study. In comparison with registered nursing staff, there are relatively fewer numbers of UCs and PSWs working on each patient care unit, and therefore, this result is not unexpected.

A large proportion of respondents (83.3%) said they worked greater than 30 hours per week, a finding almost identical to the findings reported by Kalisch, Lee, & Rochman (2010) that 83.8% of nursing staff surveyed worked greater than 30 hours a week, and very similar to the findings of Kalisch and Lee (2010) that 84.3% of participants worked greater than 30 hours per week. The majority of participants, 61.9%, reported working 12 hour shifts, whereas 33% reported working 8 hour shifts. Close to half of the participants reported they had worked at least 12 hours of overtime in the previous three months. When asked about missed work time for situations such as illness or additional rest time, 41% reported that they had missed no time in the previous year.

Of interest, 164 respondents (81.9%) identified an intention to leave their current work unit in the following year. This has significant implication for recruitment and retention of staff on many patient care units. The question about staffing on the NTS does not address whether the intention is to leave for a position outside of the NBRHC, whether it would be an internal move, or whether it would be to leave their current role or profession completely. This percentage seems to be relatively high in comparison with other studies. Cho et al. (2009) found that 33% of nurses surveyed who were working in tertiary care centers were not satisfied with their current position, while 25% had the intention to leave. The same study revealed that 35% of nurses working in secondary hospitals planned to leave their current position. Chang et al. (2009)

suggested that female nurses might be more inclined to leave their nursing positions in order to care for the needs of their children and families. Estryn-Behar et al. (2007) noted a correlation between one's intention to leave their current position and a lower score on the teamwork scale used in that study. Larrabee et al. (2003) found that only 22.5% of the sample of RNs in their study had the intention to leave. They also found that the participants who had completed their degree in the previous five years, or had worked in their current role for less than five years, were more likely to respond that they had some intention to leave.

Job satisfaction was the most significant factor influencing a participant's intention to leave (Larrabee et al., 2003). Kalisch and Begeny (2005) suggest that enhancing teamwork and team cohesion has the potential to decrease staff turnover. These factors have implications in regards to intention to leave, in the sense that retaining trained, qualified staff, who work well as part of the team, will help to maintain a level of team functioning. It is possible that members of a team that engage in effective teamwork will feel more of a commitment to staying with that team and be less likely to leave. Choi et al. (2013) suggested that other work environment factors, such as staffing and management, may also impact the decision to leave. Kutney-Lee et al. (2013) found that the work environment on a patient care unit had a substantial impact on a nurses' intention to leave their position. Aiken et al. (2002) showed that the combination of increased burnout and decreased job satisfaction was directly related to a nurses' intent to leave their position in the following year. This previous research suggests that many factors may play a role in an individual's intention to leave their current role or position. While teamwork was the major factor addressed in the current research study, there are clearly a number of other characteristics of a work environment that would impact one's intention to leave.

Research Question #1. The mean overall scores on the NTS for each patient care unit were provided in the previous section in Table 1. The critical care unit had the highest overall score on the NTS with 127.7, indicating the staff perceived higher levels of teamwork. The inpatient surgical unit had the lowest overall score with 107.5, indicating the staff perceived lower levels of teamwork. The participants from the inpatient surgical unit also had lower scores on the shared mental model, team leadership, and backup subscales. These results were similar to those from Kalisch and Lee (2009), where participants working in critical care units had some of the highest scores on the NTS, and staff working on medical-surgical units had the lowest scores on the backup subscale, and the second lowest scores on the overall NTS and the other four subscales (SMM, team leadership, trust, and team orientation). In the current study, the inpatient medical units did not have the lowest scores on the NTS, though they were lower than many of the other patient care units. This is noted because in the previous research, medical-surgical units are often grouped together when describing the data (Kalisch, Lee, & Rochman, 2010; Kalisch, Lee, & Salas, 2010), but the medical and surgical unit data were presented separately in this study.

In the current study, the patient care unit on which participants spent the majority of their time working was associated with a number of the demographic factors considered in the NTS. The demographic of the staff working on the inpatient surgical unit tended to be younger (ie. majority of participants under the age of 45) than staff working on other patient care units. The participants from that unit also reported having less experience working in their current role. These participants also reported the lowest levels of satisfaction with teamwork on their unit. Though it has not been well researched or reported in the literature, perhaps the younger, less experienced team members report lower teamwork scores because they have had less time

working on the team. In general, staff members working on medical-surgical units tend to care

for a greater number of patients than those working in a critical care setting (Davis et al., 2007).

This could potentially contribute to a stressful work environment for younger, less experienced

team members on medical-surgical patient care teams.

 Despite the finding that medical-surgical staff members tend to care for more patients in

a shift than their critical care counterparts, Davis et al. (2007) did not find a significant difference

in job satisfaction when comparing medical-surgical nurses and critical care nurses. This finding

would suggest that the number of patients cared for on each shift does not have a correlation with

job satisfaction or with level of teamwork on a patient care unit. However, as discussed above,

there are many other factors influencing the level of job satisfaction and teamwork scores for

staff working on a patient care unit. Aiken et al. (2002) found that in hospitals where nurses care

for higher number of patients, the nursing staff tends to experience higher levels of burnout as

well as being more likely to report lower levels of job satisfaction.

The inpatient surgical unit participants reported the lowest scores on the team leadership

subscale in comparison with the other patient care units. Larrabee et al. (2003) identified the

importance of leaders or nurse managers engaging in a transformational leadership style, which

has positive outcomes for the way a team functions. Having an effective, consistent leader for a

team is invaluable, and can help to ensure clarity for team members as to the expectations for the

team and how they work together. In the current study, the NICU, PACU/Day Surgery, and

CCU had the highest scores on the team leadership subscale of the NTS; these are all areas that

tend to be thought of as more acute/critical areas where staff may benefit from additional

education, training, and experience, and where there is often a higher percentage of RNs working

on the unit. The unit managers play a key role in ensuring that there is an adequate number and

appropriate mix of staff to provide safe, quality patient care on each shift (Kalisch et al., 2009).

However, leadership skills should be developed for all RNs, not only those in designated

leadership roles. This is because the RN often takes a hands-on, front-line leadership role on the

patient care team (Kalisch et al., 2009).

The findings that staff on the inpatient surgical unit had less experience in their current

roles would suggest that they also tend to be younger than the participants from other units,

which was the case in this study. This could potentially be because new graduates may start

working on general medical-surgical floors prior to specializing in other clinical areas, while,

older, more experienced staff may have transitioned to specialty units. Furthermore, many

specialty clinical areas require additional courses and training, in addition to work experience.

The importance of team leadership and management that is willing and able to provide

mentorship, educational opportunities, and support to younger, less experienced staff should not

be underestimated (Purdy et al., 2010). Effective teamwork may be helpful in fostering the

professional development and growth of newly graduated staff, as the mentorship, guidance, and

team cohesiveness may promote feelings of confidence, comfort, and competence in the clinical

setting (Purdy et al., 2010).

The CCU, NICU, and PACU/Day Surgery scored highest on the SMMs subscale on the

NTS. The nature of these specialty areas potentially encourages staff members to work together

more frequently as they care for critically ill patients. Specialty areas like the critical or

intensive care units often boast higher levels of teamwork and job satisfaction, however, in one

study by Kalisch et al. (2010a), the results indicated that the staff working in those areas

experienced less satisfaction in their roles then some of the other patient care units. Kalisch and

Lee (2013) found that specialized clinical areas often experience higher levels of teamwork when

compared to some of the more general patient care units. The TeamSTEPPS (Team Strategies and Tools to Enhance Performance and Patient Safety) program includes shared mental models as a mechanism of improving situation monitoring, one of the programs four core competencies (Ferguson, 2008). The importance of having shared mental models in teamwork should not be underestimated, as it allows team members to have a mutual awareness and understanding of the team goals, roles, and expectations. If team members are unable or unwilling to monitor each other's actions and workload, then effective teamwork is not likely occurring. This may be one way to explain lower scores on this subscale on the NTS by participants working on inpatient surgery, as the staff may not have the time to be concerned about being on the same page as their team members when they are feeling overwhelmed by their own workload or patient assignment.

The participants from the inpatient surgical unit were less likely to respond that they were "very satisfied" with the level of teamwork occurring on that patient care unit. Aiken et al. (2001) found that 32.9% of Canadian nurses reported being dissatisfied in their position at the time they completed the survey. Purdy et al. (2010) found a correlation between job satisfaction and the level of patient care provided. This is important to recognize when considering the factors influencing job satisfaction among team members. If the level of teamwork can positively impact the job satisfaction of each team member, it may ultimately impact the quality of care provided to each patient.

Because initial review of the data revealed that the participants working on the inpatient surgical unit reported lower total scores on the overall NTS, as well as on a number of the subscales, further descriptive statistics were performed. It was determined that the participants from the inpatient surgical unit had significantly higher intentions to leave their current unit when compared with participants from the other patient care units. Appel et al. (2013) suggested

that the constant turnover on medical-surgical patient care units may cultivate many barriers to creating and sustaining a healthy work environment, which may be related to the notion that newly graduated nurses may see these type of patient care units to be an appropriate entry-level position. Therefore, the intention to leave may be as a result of not only low teamwork levels, but also because of the desire of novice nurses to gain experience and move on to specialty clinical areas or different clinical settings.

Teamwork may not necessarily be something that all staff members are comfortable with. Whether it is because of current or previous experiences working on a patient care unit, the manner in which they were trained, or a lack of skill and comfort level to engage in effective teamwork, it may take some new learning and adjustments in order to become comfortable with that practice (Nelsey & Brownie, 2012). Furthermore, some staff members may be more comfortable working independently and find teamwork and collaboration challenging, particularly if it is something they were not exposed to during their education. According to Chang et al. (2009), nurses tend to experience less teamwork than various other healthcare professionals; a finding that further highlights the importance of encouraging members of the patient care team to participate in and contribute to effective teamwork, as well as providing them with the education and training to do so.

Research Question #2. The results from this particular sample did not find a statistically significant correlation between participant scores on the NTS and the perception of adequate staffing on each patient care unit. This differs from the study by Kalisch and Lee (2011), which found a positive correlation between teamwork and a number of staffing variables including the various members of the staff on a patient care team, as well as the actual number of hours allotted to each patient during a given shift. These alternative staffing variables were not

addressed in the current study. Kalisch and Lee (2011) also found that a higher level of staffing (as measured by the hours per patient day) is associated with an increased level of back up behaviour, which would suggest that adequate staffing allows for team members to be more available and able to assist others. Siassokos et al. (2011) suggested that perhaps effective teamwork and a positive work environment may help to offset staff perceptions of inadequate staffing.

While an association between teamwork and adequate staffing was not found in this particular study, it does seem intuitive that a patient care unit that is staffed appropriately according to the patient workload and acuity would provide team members the opportunity to engage and participate in effective teamwork and the behaviours and characteristics that coincide with that (Kalisch & Lee, 2011). With adequate staffing, team members are more likely to develop SMMs and engage in effective communication about patient care. The participants' understanding of the question about staffing should also be discussed. There is the potential that when participants responded to question 16 on the NTS, they responded in a way that relates to the unit being fully, as opposed to adequately, staffed. Furthermore, as discussed earlier, each individual participant may have a different perception of what it means for a patient care unit to be adequately staffed. These results suggest that there may be additional factors, other than just staffing, that are necessary to ensure safe, quality patient care is provided on all patient care units at all times.

Considering that the patients currently admitted to acute-care facilities are often more acutely ill, with additional care requirements (Davis et al., 2007), it is important to staff patient care units according to these factors. With each patient care unit being unique in terms of the patient population, it is also important to staff the unit with the staff members that are most

appropriate to care for the patients. Ensuring adequate staffing may have a positive influence on the quality of work-life for members of the patient care team. It is possible that while the acuity and complexity of patients has increased in recent years (Clark, 2009), the staffing has not changed on patient care units. Subsequently, staff members may have adapted and become accustom to an increased workload, without additional staff. If this is the case, management may perceive that staff members are able to handle the workload adequately without additional staffing requirements. In a study by Kutney-Lee et al. (2013), when staffing was considered adequate, less burnout was experienced or perceived by the participants of the study. Aiken et al. (2002) presented similar findings from their research study, where they looked at staffing in terms of a patient-to-nurse ratio, and found that when the staffing ratios were higher, nurses tended to experience less burnout and more satisfaction with their jobs. While not always a key factor in determining the quality of the work environment, adequate staffing can play a role in increasing positive outcomes for staff members. Aiken et al. (2002) also highlighted the importance of staffing for patients, suggesting that when staffing ratios are adequate for patient care units, patients will experience more positive outcomes. When compared with hospitals in New Jersey and Pennsylvania, it was found that nurses working in hospitals in California cared for one to two less patients during their shift (Aiken et al., 2010). Caring for fewer patients has led to a decrease in mortality for surgical patients in hospitals across California (Aiken et al., 2010). Their research may have particular significance for the inpatient surgical units in the current study because of the positive impacts of introducing a mandatory staffing ratio, such as a decrease in workload for staff, an increase in recruitment and retention, and most importantly, an increase in the quality of patient care (Aiken et al., 2010).

Strategies for Improving Teamwork. Kalisch, Russell, & Lee (2013) suggested that addressing the layout of the work environment and patient assignments may play a role in improving teamwork.   As well, encouraging team building strategies among the various disciplines may encourage more effective teamwork (Kalisch et al., 2013).

The research suggests that teamwork and job satisfaction are correlated (Raffery et al., 2001). If the job satisfaction of team members is maintained or improved, it is possible that they will be more likely to engage in teamwork, thus creating a reciprocating effect where teamwork and job satisfaction have a positive effect on one another. A correlation between intention to leave and job satisfaction has also been demonstrated in previous research (Simpson, 2009). In regards to the inpatient surgical unit in this study, where the results showed lower job satisfaction and higher intention to leave their current unit in comparison with the other patient care units, the relationship between the two concepts is evident. Therefore, if action is taken to enhance the job satisfaction of employees, there is the potential that this may decrease the likelihood that they will consider leaving.

Team leadership has many important benefits for effective teamwork. The team leader, whether that is the charge nurse or the unit manager, has many responsibilities to the team and its function (Salas et al., 2005). It is expected that the leader will provide the team with guidance, encouragement, and reassurance. Backup behaviour ensures that the team's goal is met by having team members who are aware of their teammates and how they are functioning in their role. It encourages team members to assist each other in completing tasks or performing tasks for each other when the patient care assignment changes or patient acuity increases (Salas et al., 2005). This reinforces the importance of working together as a team to ensure that all patients are cared for safely and effectively. Furthermore, it highlights how shifting from the idea of

"my" patients to "our" patients, can benefit both patients and staff. Reporting the lowest scores on three of the fives subscales indicates that the staff working on the inpatient surgical unit perceive they do not share the same ideas about the goals and expectations of the team, ineffective leadership for the team, and a low level of backup from their team members in terms of who needs help with what tasks. An overall negative perception about these concepts could lead to a lower overall perception of nursing teamwork on their patient care unit. The results of a study by Salmon and Ropis (2005) found that the staff working medical-surgical units perceived a work environment laden with considerable stress, which could negatively impact their levels of teamwork. This supports the idea that multiple mechanisms need to be occurring simultaneously for effective teamwork to occur (Salas et al., 2005). An effective leader would be imperative on this unit to ensure that the team is able to build a knowledge and understanding of how to work together effectively using concepts such as team orientation and backup behaviour.

Because the skills necessary to participate effectively in teamwork require some teaching and training, it is important that staff members receive education about these skills and how to implement them into their everyday practice. This will be of particular importance in developing teamwork strategies where all team members are on the same page in terms of the expectations, goals, and values of the patient care unit, which may very between individual units.

Summary. The level of nursing teamwork varies among patient care units. The specialty clinical areas reported higher levels of teamwork on their units, and these results are similar to results from previous studies using the NTS. The current study did not demonstrate a statistically significant correlation between the level of nursing teamwork and the perception of the level of staffing.

Limitations

There are a number of limitations for this study. The sample chosen may not necessarily be representative of the general population of patient care teams as it was taken from specific patient care units at one tertiary acute care healthcare facility in a northern Ontario community, and thus the results may not be generalizable to other hospitals or patient care units. For example, while greater than half of the participants in the current study responded that they were less than 44 years old, the College of Nurses of Ontario (CNO) (2013) reported that in 2013 the average age of RNs was 45.5 years old and the average age of RPNs was 42.5 years old. This may indicate that younger staff completed the survey for the current study. Despite differences in the demographic of the participant population, some of the concepts discussed may be relevant to teamwork on any patient care team in a variety of settings.

The NTS itself presents some limitations. According to Kalisch et al. (2010b), the NTS has not yet been used in the context of measuring potential changes in teamwork resulting from various interventions. The authors also suggest that additional research using the survey will be helpful in strengthening the generalizability of the survey and subsequent results.

With the use of a survey as a tool for data collection, it is possible that participants did not respond honestly or accurately. The participants were also not provided with any definitions of the concepts used throughout the NTS, which allows for individual interpretation of the questions. Furthermore, because participants were provided the option of skipping questions if they chose to do so, some of the surveys were incomplete which resulted in missing pieces of data, though all of the responses were included in data analysis. Measures were taken to increase the likelihood that participants would answer survey questions completely and honestly. Staff members were ensured that their decision to participate was completely voluntary, that they did

not have to answer questions if they were not comfortable doing so, and that their privacy would be maintained.

The use of a cross-sectional design for the study portrays the ideas, opinions, and perceptions of staff members at only one point in time. There could be circumstances influencing their answers at that point in time. Furthermore, a cross-sectional study does not allow for a rationale for the results, it simply provides the prevalence of or association between variables (Mann, 2003).

Future Considerations

Recommendations for Future Research. Future teamwork research at the NBRHC may address additional work environment factors, such as physical environment and layout of the patient care unit and staffing skill mix and ratios. A study that includes a larger, wider sample size that includes more RNs, RPNs, PSWs, and UCs from each patient care unit may be of interest in relation to this topic. While this study did have participants from each of the patient care units, a larger sample might provide some insight into the teamwork and work environment factors on each of the units.

The concept of job satisfaction may be explored further as an area of interest for future research. The results pertaining to intention to leave were different than those from previous research, and thus this topic would be interesting to address in future research. A study that takes a different approach to staffing, for example patient-to-staff ratios, may also be of interest in this setting. Because no additional data was collected in this study, it is unknown whether the intention to leave was in regards to the participants' current role, current work unit, the current facility, or the current profession, and whether it was for personal or professional reasons. This information may have value for management of the hospital in terms of understanding reasons

for why staff members are wanting to leave specific patient care units for others within the same facility. Furthermore, including members of the multidisciplinary team in future research may provide insight into teamwork among all health care team members.

There may also be some benefit in conducting research about whether more mature teams, who have had the opportunity to mutually develop their teamwork skills, engage in more effective teamwork. Little nursing research exists about the functioning of new versus mature teams. This may be particularly enlightening in regards to the participant population of this study, considering there were a large number of younger participants who were likely new to the patient care team that they worked with.

The results of the current study found no statistically significant correlation between scores on the NTS and perception of adequate staffing, however, previous research has demonstrated a correlation between the two factors. Therefore, further research to demonstrate whether or not a correlation exists between teamwork and staffing is recommended.

Considering that the participants who work on the inpatient surgical units had significantly lower scores on the NTS than those who responded from other patient care units, it may be worthwhile to further explore the reasons for these findings on this particular patient care unit, perhaps using a qualitative approach. The participants from the inpatient surgical units also reported being younger, having less experience, and having a higher intent to leave their current patient care unit. A study that addresses other factors in more depth such as job satisfaction and workload may provide some insight into these results, especially in comparison with other patient care units or other health care facilities with similar units. Furthermore, a study involving a larger sample size may help to substantiate the findings from the current study.

Recommendations for Practice. The importance of encouraging staff members to be open-minded and willing to adapt to change will be essential for considering strategies that may be implemented to improve teamwork on patient care units. While some of the literature alludes to the idea of providing teams with specific training to improve teamwork, Castner et al. (2013) suggested that this strategy alone is not enough to make a significant difference. Therefore, further ideas about how to potentially enhance teamwork are provided in the discussion below.

Strategies to enhance staff retention may indirectly result in higher levels of teamwork among a patient care team. The functioning of a team and how they interact together in order for teamwork to occur may be partially as a result of how familiar team members are with each other (Kalisch & Begeny, 2005). If consistent staffing can be maintained on a particular patient care unit, team members will become more familiar with each other, their strengths, their weaknesses, and how they function as part of the team. This may increase team cohesion, and subsequently job satisfaction; if people are satisfied in their roles, they may be more likely to stay in their current positions. Similarly, strategies to decrease the rate of absenteeism among the team may positively influence team cohesion. Higher levels of teamwork may suggest that staff members feel some level of accountability to both their fellow team members and the patients they are caring for. Therefore, considering intention to leave and how it impacts recruitment and retention of staff members may be a strategy to develop and maintain a cohesive patient care team. As well, the reasons that staff members are thinking about leaving their current role or unit should also be identified in order to determine what strategies may be effective for retention.

Having teamwork education included in curriculum in nursing programs may provide staff with at least a basic knowledge and understanding about the importance of engaging in effective teamwork when working on a patient care team. Providing education in theory-based

courses may provide nursing students with the knowledge about the factors influencing effective teamwork and the benefits for the patient population. Providing clinical-based education and putting teamwork theory into practice may assist students in developing the skills required for effective teamwork. As well, it may be beneficial to provide all new employees to a health care facility with a brief introduction to teamwork and the goals and expectations of working on the health care team. Providing unit-specific team training may help to orient staff to the goals for the patient population of that unit and ensure that staff have team orientation and shared mental models. Siassakos et al. (2011) conducted a study on a maternity unit that had already implemented teamwork training for the staff members. The findings of the survey used in the study indicated participants perceived effective and positive teamwork and patient safety on the unit; this was despite identifying large workloads and inadequate staffing levels. An important aspect of the training for the unit was to improve the overall attitudes about teamwork for staff. Clark (2009) acknowledged that it is essential to have staff members who see the importance of participating in education or training about how to engage in effective teamwork.

Providing unit leaders with sufficient training to be comfortable in that role, with an emphasis on how to successfully facilitate teamwork among team members may be considered in order to improve teamwork on a patient care unit (Kalisch & Lee, 2010). The managers and leaders of each patient care unit should also consider encouraging staff members to engage in positive teamwork behaviours such as communication and respect to ultimately enhance the level of staff and patient satisfaction (Chang et al., 2009). The nurse managers and unit leaders are faced with the task of ensuring that the members of the patient care team possess a SMM (Salas et al., 2005). The people who are in a leadership role on the patient care team have a certain

amount of responsibility for overseeing the function of the team, assisting team members to develop the necessary skills, and facilitating teamwork.

As one of the five key concepts identified for the NTS, the value of strong team leadership cannot be underestimated. The leadership team must encourage open and constructive communication among all team members and ensure that the patient care unit is a work environment where this can occur (Nelsey & Brownie, 2012). This strategy may require education about communication and collaboration for staff members, as well as a willingness to participate in change. There may also be education required around how to facilitate and coordinate communication amongst the various staff members (ie. RN, RPN, PSW, and UC); all who will have varying levels of education, training, and experience.

Nelsey and Brownie (2012) suggested that emphasis should be placed on providing the team with a patient care assignment that is manageable according to their skills and abilities. This emphasizes the importance of team members working within their roles according to their various education, skills, and experience. Additionally, considering the workload and acuity of the patient population is important for providing reasonable, manageable, patient assignments. Team members must then communicate with each other continuously to ensure that patients are receiving all of the care they require from an appropriate team member. Unit managers may help to facilitate effective communication by ensuring the work environment encourages respect among members of the patient care team (Chang, et al., 2009). The belief that "it's not my patient" or "not my job to do that" should be discouraged for all team members, while a sense that all patient care on a patient care unit is the responsibility of the entire team should be strongly encouraged by nurse leaders. This may be achieved by ensuring that team orientation is

adequate and that all team members are knowledgeable and have an understanding of the role of others working on the team (Kalisch, Lee, & Salas, 2010).

Conclusion

This research has provided a beginning understanding of the level of teamwork on various patient care units in one acute health care facility, the NBRHC. The purpose of this descriptive study was to determine the perceived level of nursing teamwork by patient care team and to determine if a relationship existed between participant perception of both teamwork and staffing.

The value of teamwork has been well-documented in the literature (Kalisch, Lee, & Rochman, 2010; Salas, Sims, & Burke, 2005). Recently, there has been a focus on multidisciplinary and interprofessional teamwork in healthcare settings (Atwal & Caldwell, 2006; Chang et al., 2009; Miller et al., 2008). However, nursing teamwork among patient care teams is also of significant importance (Kalisch & Lee, 2011; Kalisch & Lee 2010; Kalisch & Begeny, 2005). In order to ensure all patients receive appropriate care and achieve the best possible healthcare outcomes, it is important that the patient care team works together effectively.

Patient care teams require effective teamwork in order to perform the tasks needed to accomplish their goals. A high level of teamwork has a positive influence on job satisfaction of staff members and, subsequently, a positive impact on the quality of care provided by the patient care team. As evidenced by the current study, higher levels of nursing teamwork can positively influence team members to stay in their current position. This is of significance for registered nurses, registered practical nurses, personal support workers, and unit clerks, as they are

generally the staff consistently working on a patient care unit and, with the exception of the unit clerks, are generally providing direct patient care during their shift.

On patient care units where the patient care team is able to provide quality patient care through teamwork, it may become easier to include other disciplines into the team, having already developed the skills necessary to engage in proper team functioning. This may create a more positive work environment for all members of the multidisciplinary team as well as achieving the goal of positive outcomes for patients.

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Appendix A

Hello,

I am writing this email as an invitation to participate in a research project I am conducting for my Master's thesis work. Please review the below information. Coffee vouchers will be delivered to your unit this week as a token of appreciation for your time and consideration of participation.

Study Title: Factors affecting the level of teamwork in hospital nursing teams

Investigator: Andrea Rochon RN, BScN

Supervisor: Roberta Heale RN(EC), DNP

The purpose of this research project is to determine some of the factors that affect the level of nursing teamwork between members of a nursing team and to develop an understanding of the relationship that may exist between staffing and teamwork. The Nursing Teamwork Survey will be used to collect data from members of the nursing team (registered nurses, registered practical nurses, personal support workers, and unit clerks). Data from this study will be grouped according to unit and a comparison between units will be completed. The results may provide insight into how nursing teams can function more effectively.

The survey is online and is delivered through software called FluidSurvey. Some demographic information will be collected in the first portion of the study, while the second part is the Nursing Teamwork Survey. Your identity will not be tracked. No identifying demographic characteristics will be collected (i.e. Name, address, or email). All data collected will remain completely confidential to ensure the privacy of anyone who chooses to participate. This online survey will take approximately 20 minutes to complete.

You are not required to complete the survey and your decision to participate is voluntary. If you choose to begin the survey and do not complete all of the survey questions, there will be no consequence to you or your employment. Should you choose to complete only a portion of the questions, the incomplete answers will be used for data analysis as they are submitted. Due to the subject matter of the survey, there is the potential that you may feel uncomfortable answering some of the questions. You may, at any time, choose to not answer one or more questions or to exit the survey completely. Contact information is provided at the end of this email should you

have any questions or concerns you would like to discuss. The data collected will be stored on a password protected laptop that will be stored in a secure place. The data will be deleted once the research has been completed and approved.

Once you have read the above information and are agreeable to continue and complete the survey, please press the continue button. This will imply that you are consenting to participate in the survey.

Following the completion of the research, a summary of the results of the research will be sent to all staff members invited to participate in the survey. This summary will not include any identifying demographic data to ensure the privacy and confidentiality of those who did choose to participate.

If you have any questions or concerns regarding the survey or your participation in the survey please feel free to contact me via email at az_rochon@laurentian.ca, or my supervisor Roberta Heale at rheale@laurentian.ca or 705-675-1151 or 1-800-461-4030 ext. 3971. If you have any questions about the ethics of this study, please contact Pauline Zanetti at ethics@laurentian.ca or at 705-675-1151 or 1-800-461-4030 ext. 2436 or Amanda Degagne at Amanda.degagne@nbrhc.on.ca or at 705-474-8600 ext. 3350.

If you choose to complete the survey, please click on the following link:

Sincerely,

Andrea Rochon, RN, BScN

Appendix B

NURSING TEAMWORK SURVEY

1. **Name of the unit** you work on: _____

2. I spend **the majority of my working time** on this unit**:** _____ yes   _____ no

3. **Highest education level:**

    1. _____ Grade school
    2. _____ High School Graduate (or GED)
    3. _____ Associate degree graduate
    4. _____ Bachelor's degree graduate
    5. _____ Graduate degree

4. **If you are a nurse, what is the highest degree:**

    1) _____ LPN Diploma
    2) _____ RN Diploma
    3) _____ Associate's degree in nursing (ADN)
    4) _____ Bachelor's degree in nursing (BSN)
    5) _____ Bachelor's degree **outside** of nursing
    6) _____ Master's degree (MSN) or higher in nursing
    7) _____ Master's degree or higher **outside** of nursing

5. **Gender:** _____ Female   _____ Male

6. **Age:**

    1) _____ Under 25 years old (<25)
    2) _____ 25 to 34 years old (25-34)
    3) _____ 35 to 44 years old (35-44)
    4) _____ 45 to 54 years old (45-54)

5) _____ 55 to 64 years old (55-64)
6) _____ Over 65 years old (65+)

7. **Job Title/Role:**

   1) _____ Staff Nurse (RN)
   2) _____ Staff Nurse (LPN)
   3) _____ Nursing Assistant (e.g., nurse aides/tech)
   4) _____ Nurse manager, assistant manager (e.g. administrators on the unit)
   5) _____ Unit Clerk/Secretary
   6) _____ Other [Please specify: _____]

8. Number of **hours usually worked per week** (check <u>only</u> one)
    1) _____ less than 30 hours per week
    2) _____ 30 hours or more per week

9. **Work hours** (check the one that is <u>most</u> descriptive of the hours you work)

    1) _____ Days (8 or 12 hour shift)
    2) _____ Evenings (8 or12 hour shift)
    3) _____ Nights (8 or 12 hour shift)
    4) _____ Rotates between days, nights or evenings

10. **Experience in your role:**

    1) _____ Up to 6 months
    2) _____ Greater than 6 months to 2 years
    3) _____ Greater than 2 years to 5 years
    4) _____ Greater than 5 year to 10 years
    5) _____ Greater than 10 years

11. **Experience** on your **current patient care unit:**

    1) _____ Up to 6 months
    2) _____ Greater than 6 months to 2 years
    3) _____ Greater than 2 years to 5 years
    4) _____ Greater than 5 year to 10 years
    5) _____ Greater than 10 years

12. Which **shift** do you most often work?

    1) _____ 8 hour shift
    2) _____ 10 hour shift
    3) _____ 12 hour shift
    4) _____ 8 hour and 12 hour rotating shift
    5) _____ Other [Please specify: _____]

13. In the past 3 month, how many hours of **overtime** did you work?

      1) _____ None
      2) _____ 1-12 hours
      3) _____ More than 12 hours

14. In the past 3 months, how many days or shifts did you **miss work** due to illness, injury, extra rest etc. (exclusive of approved days off)?

      1) _____ None
      2) _____ 1 day or shift
      3) _____ 2-3 days or shifts
      4) _____ 4-6 days or shifts
      5) _____ over 6 days or shifts

15. Do you plan to **leave your current position?**

    1) _____ in the next 6 months
    2) _____ in the next year
    3) _____ no plans within the year

16. How often do you feel **the unit staffing is adequate?**

    1) _____ 100% of the time
    2) _____ 75% of the time
    3) _____ 50% of the time
    4) _____ 25% of the time
    5) _____ 0% of the time

17. **On the current or last shift** you worked, how many **patients** did you care for? _____

    17-a. how many **patient-admissions** did you have (i.e. includes transfers into the unit)?
    _____

    17-b. how many **patient-discharges** did you have (i.e. includes transfers out of the unit)?
    _____

Please check one **response for each question.**

	Very satisfied	Satisfied	Neutral	Dissatisfied	Very dissatisfied
18. **How satisfied** are you in your **current position**?					
19. Independent of your current job, **how satisfied** are you with **being a nurse or a nurse assistant or a unit clerk/secretary?**					

20. **How satisfied** are you with **the level of teamwork on this unit?**					

NURSING TEAMWORK SURVEY

Please fill in all the following items regarding **YOUR TEAM**. Team is defined as the group of people working on a patient care unit (or a section of a unit such as a wing) including **nurses, nursing assistants/aides/techs and unit clerks/secretaries**. It does **NOT** refer to individuals **who visit the unit** such as pharmacists, physicians, physical therapists etc.

ITEM	Rarely	25% of the time	50% of the time	75% of the time	Always
1) All team members understand what their responsibilities are throughout the shift.					
2) The nurses who serve as charge nurses or team leaders monitor the progress of the staff members throughout the shift.					
3) Team members frequently know when another team member needs assistance before that person asks for it.					
4) Team members communicate clearly what their expectations are of others.					
5) Team members ignore many mistakes and annoying behavior of teammates rather than discussing these with them.					
6) When changes in the workload occur during the shift (admissions, discharges, patients problems etc.), a plan is made to deal with these changes.					
7) Team members know that other members of their team follow through on their commitment.					
8) The nurses who serve as charge nurses or team leaders balance workload within the team.					
9) My team believes that to do a quality job, all of the members need to work together.					

10) The shift change reports contain the information needed to care for the patients.					
11) Some team members spend extra time on breaks.					

Team is defined as the group of people working on a patient care unit (or a section of a unit such as a wing) including **nurses, nursing assistants/aides/techs and unit clerks/secretaries**. It does **NOT** refer to individuals **who visit the unit** such as pharmacists, physicians, physical therapists etc.

ITEM	Rarely	**25%** of the time	**50%** of the time	**75%** of the time	Always
12) Team members respect one another.					
13) When a team member points out to another team member an area for improvement, the response is often defensive.					
14) Team members are aware of the strengths and weaknesses of other team members they work with most often.					
15) If the staff on one shift is unable to complete their work, the staff on the on-coming shift complains about it.					
16) Staff members with strong personalities dominate the decisions of the team.					
17) Most team members tend to avoid conflict rather than dealing with it.					
18) Nursing assistants and nurses do not work well together as a team.					
19) The nurses who serve as charge nurses or team leaders are available and willing to assist team members throughout the shift.					
20) Team members notice when a member is falling behind in their work.					

21) When the workload becomes extremely heavy, team members pitch in and work together to get the work done.					
22) Feedback from team members is often judgmental rather than helpful.					
23) My team readily engages in changes in order to make improvements and new methods of practice.					
24) Team members readily share ideas and information with each other.					

Team is defined as the group of people working on a patient care unit (or a section of a unit such as a wing) including **nurses, nursing assistants/aides/techs and unit clerks/secretaries**. It does **NOT** refer to individuals **who visit the unit** such as pharmacists, physicians, physical therapists etc.

ITEM	Rarely	**25%** of the time	**50%** of the time	**75%** of the time	Always
25) Team members clarify with one another what was said to be sure that what was heard is the same as the intended message.					
26) Team members are more focused on their own work than working together to achieve the total work of the team.					
27) The nurses who serve as charge nurses or team leaders give clear and relevant directions as to what needs to be done and how to do it.					
28) Within our team, members are able to keep an eye out for each other without falling behind in our own individual work.					
29) Team members understand the role and responsibilities of each other.					
30) Team members willingly respond to patients other than their own when other team members are busy or overloaded.					
31) Team members value, seek and give each other constructive feedback.					
32) When someone does not report to work or someone is pulled to another unit, we reallocate responsibilities fairly among the remaining team members.					
33) Team members trust each other.					

THANK YOU FOR YOUR PARTICIPATION!!

Appendix C

Good Morning,

This is a reminder email, as a follow-up to the email that was sent out one week ago, inviting you to complete the Nursing Teamwork Survey, online via FluidSurvey, as part of my Master's thesis research. All RN's, RPN's, PSW's, and UC's are invited to complete the survey as time permits. The link to the survey will be available for four weeks. The purpose of this research project is to determine some of the factors that affect the level of nursing teamwork between members of a nursing team and to develop an understanding of the relationship that may exist between staffing and teamwork.   Please review the initial email for additional information.

The survey will take approximately 20 minutes to complete. The decision to participate in the survey is completely voluntary, and there are no consequences to not participating.

If you have any questions or concerns regarding the survey or your participation in the survey please feel free to contact me via email at az_rochon@laurentian.ca, or my supervisor Roberta Heale at rheale@laurentian.ca or 705-675-1151 or 1-800-461-4030 ext. 3971. If you have any questions about the ethics of this study, please contact Pauline Zanetti at ethics@laurentian.ca or at 705-675-1151 or 1-800-461-4030 ext. 2436 or Amanda Degagne at Amanda.degagne@nbrhc.on.ca or at 705-474-8600 ext. 3350.

If you would like to complete the survey, please click on the following link:

http://fluidsurveys.com/surveys/andrea-Ws/nursing-teamwork-survey/?code=

Sincerely,

Andrea Rochon, RN, BScN