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Relationship Between Years of Experience, Age, Teamwork, and Medical-Surgical Nurses' Intentions to Stay

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Walden University
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Abstract

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MSN, Southern Adventist University

BSN, University of Tennessee at Chattanooga

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

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Abstract

The United States is currently experiencing a nurse staffing crisis that is significantly impacting the medical-surgical (MS) nursing workforce. With MS nurses providing the most care for inpatient beds, hospital administrators must identify strategies that support MS nurse retention to preserve access to care for patients and support patient safety. The purpose of this study, guided by the complex adaptive systems theory, was to understand the relationship between teamwork, age, years of experience, and MS nurses' intentions to stay in their roles in acute care hospitals. MS nurses were recruited via invitations from the chief nursing officer of a system or social media recruitment flyer. The final sample consisted of 82 MS nurses with at least 6 months of experience who responded to questions from the Nursing Teamwork Survey and the Organizational Commitment Questionnaire. Likert scale responses were analyzed quantitatively using linear and multiple regression analyses. The findings of this cross-sectional survey revealed a statistically significant relationship, with a medium effect, between teamwork ($R^2 = 0.22$, $p < 0.001$), mature age ($R^2 = 0.32$, $p = 0.003$), and MS nurses' intentions to stay in their acute care roles in a hospital. Future research using a longitudinal design and a larger sample size is recommended. The findings of this study may raise awareness among MS administrators and nurse leaders to develop strategies that promote teamwork in acute care hospital MS nursing staff and promote research on the impact of teamwork and age on MS nurses' intentions to stay in their roles in acute care hospitals, which results in increase in nursing staffing and impacts positive social change.

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Dedication

I dedicate this work to my husband, David. He has made this work feasible and still managed to be a good sport regardless of where I took my computer. I also want to dedicate this to my amazing children. I want them to know that anything is possible. I cannot forget to mention my dad, who passed away at a young age as I first entered college. He always pushed me to do big things in life. I wish he could see this because the memory of his words was a significant driver for my ability to achieve this goal. Thank you to my mom who is always an encourager. Finally, I dedicate this to all of my nurse colleagues who inspired me along the way. There are so many of you I cannot possibly name you all.

Acknowledgments

There are so many people to acknowledge as I reach this milestone. I am grateful for friends and family who encouraged me along the way. I would especially like to thank Dr. Long, who has been an amazing source of guidance and encouragement for me through significant changes in my life at the end of this journey. I do not think I would have made it without her gently pushing me through the final stages. I am truly grateful.

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Chapter 1: Introduction to the Study

Introduction

In the United States (US), the number of nurses leaving the workforce exceeds the number of nurses entering the profession, and hospitals are experiencing significant workforce challenges along with financial impacts (Brook et al., 2019; McCarthy et al., 2021; Steele-Moses, 2021). According to a recent survey, it can cost up to $52,000 to recruit and hire one medical-surgical (MS) nurse (Nursing Solutions Inc., 2023). Reduced staffing is also known to contribute to missed care, resulting in negative patient (and nursing) outcomes (Cho et al., 2020). Nurses turning over frequently and high vacancy rates left organizations experiencing higher lengths of stay and higher mortality rates than their counterparts (Jones & Gates, 2013; Needleman et al., 2020). Hospital administrators have found themselves forced to explore strategies to improve nurse retention, or nurses' intentions to stay, within their organizations. Steele-Moses (2021) suggested exploring specific attributes of nursing units and the correlating contributions to nurses' satisfaction and intentions to stay in their roles. Teamwork has been identified as one strategy to improve the completion of patient care tasks in the face of staffing challenges and further improve the potential for nursing retention (Bragadóttir et al., 2023; Zhao et al., 2020). Bragadóttir et al. (2023) suggested that teamwork may contribute to nurses' decisions to stay.

This study addressed a gap in the literature on the relationship between age, years of experience, teamwork, and MS nurses' intentions to stay in an acute care hospital setting (Bragadóttir et al., 2023; Phillips, 2020). The following paragraphs of Chapter 1

describe the background, problem, purpose, research questions, theoretical framework, nature of the study, definitions, assumptions, scope and delimitations, limitations, and significance in further detail.

Background

Shortages in the nursing workforce have been an ongoing topic in the United States (US) for many years. In 2011, The Institute of Medicine (2011) published a report, *The Future of Nursing*; *Leading Change, Advancing Health,* which outlined a plan to address and strengthen the nursing workforce by attracting and retaining well-prepared nurses. However, there has been little improvement since that publication, with a profound exacerbation of the nursing shortage in recent years. The US Bureau of Labor Statistics (2023) has suggested that the demand for nurses has grown at a rate of 6%, faster than all other occupations, with as many as 193,000 openings projected each year over the next decade. Kiel (2020) highlighted that 30% of nurses leave their first nursing role within one year, with another 57% leaving in the second year.

Medical-surgical (MS) nurses make up approximately 21% of the nursing workforce (making up more than 600,000 MS nurses), representing the largest nursing specialty in the US (Academy of Medical-Surgical Nurses, 2019). They also represent the largest nursing workforce in acute care hospitals. Medical-surgical nurses staff most inpatient hospital beds resulting in the need for a competent and ample supply of MS nurses to support hospital operations. However, hospital leaders reported that MS nurses contribute to the most significant shortage and the greatest need in the nursing workforce (Carbajal, 2023). Complicating MS nursing workforce shortages, patient acuity and

length of stay have increased in recent years (American Hospital Association [AHA], 2022), further stressing the MS workforce. Nurses have lost interest in the MS role with the increased workloads as a result of the workforce shortage, further exacerbating adverse patient and nurse outcomes (Phillips, 2020).

Problem Statement

There is a growing shortage of nurses throughout the United States (US). The US Bureau of Labor Statistics (2022) projects an increasing vacancy rate of more than 200,000 nurses over the next decade, with demand growing by six percent (increased demand of an additional 177,400 registered nurses). Inadequate staffing and instability in the workforce have been linked to nursing errors and missed care, with an estimated 251,000 patients' lives being impacted each year (Cho et al., 2020; Cho et al., 2021; Cho et al., 2022). Additionally, the number of nurses leaving their roles taxes the funding of healthcare institutions and may impact access to healthcare, especially for rural and remote populations (Adams et al., 2021; Brook et al., 2019). Steele-Moses (2021) noted that hospitals lost more than five million dollars in 2019 due to nursing turnover. Rosen et al. (2018) discussed the importance of teamwork in safe patient care. This nurse exodus creates a need to identify retention strategies for preventing attrition and worsening the nursing shortage.

With MS nurses making up a large portion of the hospital workforce, strategies are needed to overcome high attrition rates (Phillips, 2020; Steele-Moses, 2021). In a quantitative survey of 58 MS nurses, 43% indicated the desire to leave their role, with 52% noting a plan to leave over the following year (Phillips, 2020). Zhao et al. (2020)

performed a systematic review and identified teamwork as a potential strategy to improve nurses' intentions to stay. Bragadóttir et al. (2023) found a significant relationship between years of experience and job satisfaction, with job satisfaction contributing to intention to stay. A literature review indicates the need to better understand the relationship between age, years of experience, and nurses' intentions to stay as potential contributing factors for MS nurses' attrition. Keith et al. (2021) found that millennials are the largest generation and the greatest threat to nursing supply, suggesting age is an individual characteristic and factor. Kiel (2020) noted age as a contributor to nursing turnover. Steele-Moses (2021) surveyed MS nurses and found that age and work experience influenced job satisfaction. However, little research validates that years of experience, age, and teamwork are directly related to MS nurses' intentions to stay in their current roles. Additional research is needed to improve MS nurses' intentions to stay (Adams et al., 2021; Bragadóttir et al., 2023; Brook et al., 2019; Cho et al., 2022; Furukawa et al., 2021).

Recent literature suggests that a growing number of medical-surgical nurses do not intend to stay in their roles in acute care hospital settings (Phillips, 2020). The result has been increased nurse-to-patient ratios, costs to the organization, and potentially adverse patient outcomes (Phillips, 2020). In a prospective study of 400,000 medical-surgical patients, higher nurse-to-patient ratios increased 30-day mortality rates (McHugh et al., 2021). Cho et al. (2020) noted that staffing gaps contributed to missed care and negative effects on both patients and nurses. To mitigate this MS staffing gap, it is essential to improve MS nursing retention and to identify strategies to improve MS

nurses' intentions to stay in their roles. Understanding any relationship of the independent variables of age, years of experience, and teamwork to the dependent variable of MS nurses' intentions to stay in their roles, administrators can more readily identify strategies that will make the most impact on patient care and nursing outcomes.

Purpose of the Study

The purpose of the study was to determine the relationship between the independent variables, years of experience, age, and teamwork, and the dependent variable, MS nurses' intent to stay in an acute care hospital setting. Medical-surgical nurses are critical for delivering safe patient care in acute care settings (Cho et al., 2020; Cho et al., 2022). Understanding these relationships may assist in identifying strategies to help mitigate the current workforce shortages within MS departments, further improving patient and nursing outcomes.

Years of experience, age, and teamwork have been associated with job satisfaction, which in turn impacts nurses' intentions to stay (Bragadóttir et al., 2023; Cho et al., 2020; Cho et al., 2021; Kiel, 2020; Zaheer et al., 2021). The workforce shortage has resulted in nurses leaving their roles (Al-Sabei et al., 2021; Bragadóttir et al., 2023; Cho et al., 2021; Zaheer et al., 2021). Adding demographic concepts to the study, such as years of experience and age, may provide even further insight into the factors that influence nurses' intent to stay in the effort to preserve the workforce and improve patient safety.

Research Questions and Hypotheses

The following questions were used to guide this study and data analysis:

RQ1: What is the relationship between teamwork and MS nurses' intentions to stay in acute care hospitals?

H_0*1*: There is no statistically significant relationship between teamwork and MS nurses' intentions to stay in acute care hospitals.

H_a1: There is a statistically significant relationship between teamwork and MS nurses' intentions to stay in acute care hospitals.

RQ2: What is the relationship between years of experience, age, teamwork, and MS nurses' intentions to stay in acute care hospitals?

H_0*2*: There is no statistically significant relationship between years of experience, age, teamwork, and nurses' intentions to stay in acute care hospitals.

H_a2: There is a statistically significant relationship between years of experience, age, teamwork, and nurses' intentions to stay in acute care hospitals.

Theoretical Framework

The concept of a complex adaptive system originated from complexity theory and systems theories of von Bertalanffy and Capra, which were originally applied to various scientific systems (Plsek, 2001). Plsek (2001) described a complex adaptive system (CAS) as agents that interact with one another and the environment, resulting in outcomes that shape the group or future interactions of the group. Applying those concepts to healthcare organizations, Plsek (2001) focused on relationships and human behaviors, which resulted in positive or negative outcomes. Chafee and McNeill (2007) later aligned the application of complexity science to nursing, with the nurse being an agent and the nursing unit being a CAS. Employee behavior and the complex

environment of a healthcare organization can be appropriately viewed through the framework of complexity science to assist in decision-making for nursing science and practice (Chafee & McNeill, 2007). Plsek's CAS definition provides context for studying teamwork and aligning relationships as the primary drivers of performance, which may change the context or dynamic of the team (Plsek & Wilson, 2001).

Nature of the Study

The nature of this study was a quantitative cross-sectional survey research design. Quantitative methodology included standard bivariate linear and multiple regression analysis to examine the relationship between years of experience, age, teamwork, and nurses' intentions to stay. Teamwork was measured using the Nursing Teamwork Survey (NTS) and the Organizational Commitment Questionnaire (OCQ), which measured nurses' intentions to stay. Participants responded to survey questions obtained from these validated survey tools served as primary data. Participants also provided descriptive and demographic data.

Population

I utilized convenience sampling methods to enroll participants through the purposeful sampling of MS nurses employed in acute care hospitals. Chief nursing officers from a network of seventy hospitals were educated and asked to assist in recruiting participants (Appendix A). These hospital administrators were provided with a flyer (Appendix B), which included information on the study, enrollment instructions, and links to a SurveyMonkey survey to share with eligible participants. Participants were informed of inclusion criteria of at least six months of experience in MS nursing on their

current unit as well as being employed as a registered nurse (RN) or licensed practical nurse (LPN) at the time of the study. Exclusion criteria included being in a non-nursing role and having less than 6 months of experience. Participation was voluntary and confidential. Nurses could choose to exclude themselves if they are unwilling to participate. For nurses who chose to participate, they could stop at any time or skip any question if they became uncomfortable.

Variables and Definitions

- Age was measured in years for the study and was noted to be a predictor of nursing attrition. Al-Sabei et al. (2021) found that younger nurses had a greater turnover rate than older nurses (Al-Sabei et al., 2021).
- Medical-surgical nurses' intentions to stay in an acute care hospital setting were measured as organizational commitment and measured using the OCQ (Mowday et al., 1979). Mowday et al. (1979) identified behaviors associated with organizational commitment.
- Teamwork was a process of interactions and attitudes between a group of agents acting together within an MS department, which can be found within, or even form, a CAS (Bragadóttir et al., 2023; Salas et al., 2008; Schmutz et al., 2019). Teamwork was measured via the validated NTS tool, which measures characteristics of teamwork and team interactions on a Likert scale. Teamwork was expressed as a mean of the total teamwork score and the mean of the subscales of teamwork found within the survey tool. Recent studies

indicated teamwork may predict an ability to retain nurses (Baker et al., 2006; Braggadótir et al., 2023; Rosen et al., 2018).

- Years of experience was the total number of years the MS nurse had worked as an LPN or RN. Years of experience has been associated with effective teamwork and satisfaction with current nursing roles (Bragadóttir et al., 2023; Zaheer et al., 2021).

Assumptions

The following statements were assumed to be true about the topic of MS nurses' intentions to stay and the workforce shortage, yet have not or cannot be proven. I assumed that nurses would be interested in staying in MS roles given the appropriate support and training. Teamwork is a factor that contributes to a positive work environment and organizational commitment is an indicator of intention to stay. I also assumed that identifying predictive characteristics of the work environment would serve as a potential strategy to promote MS nurses' intentions to stay. As an outcome of this study, it was assumed that participants would answer openly and honestly and follow instructions for appropriate inclusion and exclusion criteria.

Scope and Delimitations

The scope of this study was quantitative in nature. The population was limited to MS nurses for exploring factors that would predict intent to stay in their role with a focus on teamwork, years of experience, and age. Recent literature indicated these variables may impact nurses' intentions to stay, although there had not been a focus on MS nurses (Al-Sabei et al., 2021; Bragadóttir et al., 2023).

The scope also served as a delimitation of this study. Participants could self-enroll from 70 hospitals across 15 states within the US. The broad reach of participants was intended to strengthen the study results. Another factor that strengthened the study was the anonymous nature of the survey. Power analysis was used to determine the appropriate sample size. Survey tools were valid and tested for rigor and reliability (Cresswell & Cresswell, 2019; Smith & Noble, 2017).

Limitations

Limitations of the study included a cross-sectional approach, convenience sampling, and self-enrollment, which prevented the study from being truly generalizable to the entire population of MS nurses. Response rates could vary from state to state or even hospital to hospital, with a varying degree of willingness to answer questions openly. Additionally, the time-sensitive nature of this study prevented a cause-and-effect relationship from being established through this cross-sectional approach as the results were based on a snapshot in time due (Zaheer et al., 2021). It was also possible that participants may have provided subjective answers due to bias. Web-based surveys do not allow for the ability to ensure that the respondents are the intended target population (Nayak & Narayan, 2019).

Significance of the Study

The significance of this quantitative study of the relationship between years of experience, age, teamwork, and MS nurses' intentions to stay in their role in acute care hospitals in the US is that it serves as an original contribution to the current knowledge on teamwork. The impacts of the nursing shortage have been well documented, resulting

in evidence of poor nursing and patient outcomes (Al-Sabei et al., 2021; Raso et al., 2021; Bureau of Labor Statistics, 2022). However, there have been few documented solutions, such as the use of teamwork, which may increase MS nurses' intentions to stay in their roles, strengthen the workforce, and contribute to positive social change (Adams et al., 2021; Bragadóttir et al., 2023). The results of this study have implications for all nursing leaders and hospital administrators, and the findings will be disseminated to a large audience.

Summary

The current nursing shortage has created a significant challenge for healthcare administrators. Decreased staffing in acute care hospitals, with the most impact on medical-surgical nursing units, has resulted in missed nursing care procedures and higher mortality rates for patients (Brook et al., 2019; Cho et al., 2020; Cho et al., 2021; McCarthy et al., 2021; Steele-Moses, 2021; Musy et al., 2021; Needleman et al., 2019; Zhao et al., 2020). Poor patient outcomes and increased workloads have ultimately led to poor nursing outcomes and nursing attrition, further complicating the staffing shortage (Cho et al., 2020; Cho et al., 2021; Kaiser & Westers, 2017).

Nursing leaders, key advocates for nursing staff and patients, have been forced to identify strategies to mitigate the impact of the staffing shortage. Evidence suggests that teamwork may play a role in mitigating the strain on the workforce, improving nurses' perceptions of the work environment, and improving MS nurses' intentions to stay in their current role (Bragadóttir et al., 2023; Cho et al., 2021; Costello et al., 2021; Gho et al., 2020; Kaiser & Westers, 2017; Zhao et al., 2020).

This study aimed to better understand the relationship between teamwork and MS nurses' intentions to stay in their role, as well as the impact that age and years of experience have on those relationships. Research designed to better understand the impact of these relationships could serve to identify feasible strategies that strengthen the workforce of MS nurses in acute care settings. Identifying tactics to mitigate the impacts of the nursing shortage is imperative for social change, improving access to timely care, and overall patient outcomes. In Chapter 2, I provide a review of the current literature, the literature search strategy, the theoretical framework, and a comprehensive literature review of the nursing shortage within the context of years of experience, age, teamwork, and MS nurses' intentions to stay in their roles.

Chapter 2: Literature Review

Introduction

Longstanding nursing shortages are widespread across the US without much resolve (Peters, 2023). This shortage was exacerbated in recent years as aging nurses exited the workforce, and registered nurses left the bedside to pursue advanced nursing education (Buerhaus, 2021). Adding to the problem, the COVID-19 pandemic impacted the dynamics of nursing supply and demand with many nurses assuming more temporary roles (Buerhaus, 2021). According to Phillips (2020), a survey indicated that 55% of nurses reported their workload did not allow for providing adequate time and attention to patient care and 33% of those nurses considered leaving their role. Medical-surgical nurses make up the largest number of nurses in acute care hospitals (Academy of Medical-Surgical Nurses, 2019), and they represent the largest vacancy in the nursing hospital workforce. Phillips (2020) reported a gap in the literature regarding MS nurses and the contributors to the MS nursing workforce shortages. The purpose of this study was to explore the relationship between MS nurses' years of experience, age, teamwork, and intentions to stay in their current role. The following paragraphs of Chapter 2 discuss the literature search strategy, theoretical foundation, literature review of key concepts and variables, and a summary of the literature review findings.

Literature Search Strategy

To review the literature associated with my study, I conducted an advanced search using EBSCO through the Walden University Library as well as searched relevant content on professional organization sites such as the Academy of Medical-Surgical

Nurses (AMSN) and the Bureau of Labor Statistics. My initial search resulted in 864 results when searching my key terms individually. I then used combinations of key terms and narrowed the search to *nursing teamwork and nursing turnover, nursing teamwork and nurse retention, nursing teamwork and attrition, nursing teamwork or intent to stay, nursing teamwork subscales, nursing teamwork and job satisfaction, intent to stay and medical-surgical nurses, intent to leave and medical-surgical nurses, Nursing Teamwork Survey* (NTS) *and turnover,* and *Organizational Commitment Questionnaire (OCQ) tool and nursing.* This narrowed the results of my search to 26 articles, which were evaluated for relevance to my study. I then added content from the reference pages of those 26 articles. I then searched for specific titles for *Nursing Teamwork Survey* (NTS), *Organizational Commitment Questionnaire* (OCQ), and *Complex Adaptive Systems* (CAS) theory.

Scope of Literature Review

My search was limited to full-text peer-reviewed journals in the English language, published between the years 2017 and 2024. References within each article were scanned for contributing and associated literature that may be helpful or connected to my topic for further review, with those articles being reviewed independently of the original search. I included a few older articles that may provide foundational information for the concepts in my study. All literature relevant to nurses' intentions to stay and teamwork was included in my literature review. Literature that was not relevant or did not align with my study was excluded. Additional articles were found in the reference sections of those relevant articles selected for my literature review.

Theoretical Framework

The theoretical basis for this study was an evolving science known as complex adaptive systems (CAS) rooted in complexity science and social science theories. A CAS is composed of agents or people who interact within the system and their patterns of behavior (Butts & Rich, 2015; McEwen & Wills, 2019). The patterns of behavior within the system are typically the outcome of the relationships among the agents within the system (Butts & Rich, 2015). Characteristics of complex adaptive systems include self-organization, autonomy, decentralized control, attractors, the evolution of behaviors or rules, emergence, diversity, and adaptability (Butts & Rich, 2015; McEwen & Wills, 2019).

Complex Adaptive Systems Theoretical Foundation

At the root of CAS, complexity science is grounded in mathematical principles and the relationships between variables within a system (Butts & Rich, 2015; McEwen & Wills, 2019). Capra, as quoted by Holden (2005), stated, “Nature does not show us any isolated basic building blocks, but rather appears as a complicated web of relations between the various parts of a unified whole.” This concept delineates CAS as the relationship between people in a larger system in much the same way as the original context of quantum physicists delineated relationships between atomic particles as dynamic and responsive to surroundings (Butt & Rich, 2015; McEwen & Wills, 2019).

Ratnapalan and Lang (2019) noted systems theory as another contributor to CAS. Holden (2015) further noted the systems thinking of nursing theorists King and Johnson as a basis for the relationships found within CAS, with complexity science adding a new

dimension. Roy's adaptation model and Roger's science of unitary human beings also draw on the science of physics and processes, much like complexity science, that may also serve as precursors to CAS (Holden, 2015). The strong connection between nursing theory, relationships, and social sciences made CAS an excellent choice for studying teamwork and relationships in nursing today. It served as the foundation for my choice as a theoretical framework.

Major Theoretical Propositions

Plsek (2001) described CAS as "interconnected agents with the freedom to interact with one another or the environment whose individual actions may impact the context for one another or the group." Pslek's use of a complex adaptive system originated from von Bertalanffy's systems theory and Capra's complexity theory (Plsek, 2001). Applying those concepts to healthcare organizations, Plsek (2001) focused on relationships and human behaviors that can result in positive or negative outcomes, aligned with teamwork. Chaffee and McNeill (2007) later aligned CAS to nursing departments with the nurse and the environment central to outcomes. In the case of this study, those positive or negative outcomes are considered in keeping teams whole and are the measure of the outcome variable of MS nurses' intentions to stay in their role.

Plsek's CAS model and the concepts described in this paragraph provide context for studying teamwork as a primary driver of performance and nursing engagement, which may change the context or dynamic of the team (Plsek & Wilson, 2001). Specifically, for this study, the medical-surgical units are the CASs, and the nurses working within the system are agents interacting within the system.

Literary Analysis of Complex Adaptive Systems

Pype et al. (2017) performed a qualitative study to describe interactions of the healthcare team and use of complex adaptive systems (CAS) characteristics and principles. Two researchers interviewed fifty-nine participants and identified a system to code the data through investigator triangulation for reliability and credibility. The study aimed to identify CAS principles in the team's day-to-day work. After the interviews, all CAS principles were identified within the participants' descriptions of team dynamics. The researchers noted the perceptions of team interactions aligned with CAS principles and provided a basis for team training through the framework of complexity theory (Pype et al., 2018). Pype et al. (2018) followed up their 2017 study with a quantitative method to assess healthcare teams and leadership as CAS. CAS's Core principles were consistent with healthcare team activities (Pype et al., 2018). Wilson et al. (2023) studied CAS as an approach to quality improvement in healthcare. The findings were consistent with other descriptions of CAS, agent rules, and interactions that impact the outcomes of the system. The parallels of teamwork and the components of CAS align well with my study of teamwork.

In a concept analysis, Holden (2005) described a complex adaptive system as agents who act freely and unpredictably yet are interconnected. Holden (2005) noted the emergence of CAS as a nursing and healthcare research framework. As part of the concept analysis, individual agents were found to be the antecedents of CAS, with adaptation or emergence as a consequence (Holden, 2005). The model case for the analysis comprised a group of nurses who created team processes to impact performance

improvement (Holden, 2005). The outcomes and findings were noted to be less significant than the process. The process improved the interactions and connections between the agents and the collaborative nature of the teams (Holden, 2005). Holden noted (2005) that CAS involved relationship building to solve problems. It is also important to note that teamwork has been defined as a process of interactions and attitudes between a group of agents acting together (Salas et al., 2008; Schmutz et al., 2019). Teamwork, for this study, was defined as a process of interactions and attitudes between a group of agents acting together within an MS department (Salas et al., 2008; Schmutz et al., 2019), which can be found within or even form a CAS.

CAS and the Relationship to This Study

Complex adaptive systems (CAS) are interactions between agents (Plsek, 2001). Kash et al. (2018) defined teamwork as "two or more people who work together adaptively to achieve specified and shared goals." Kaiser and Westers (2017) compared teamwork processes to systems thinking in healthcare much in the way that Pslek (2001) discussed complexity science to "fix things." The parallels between these definitions make the CAS framework a good fit for studying teamwork and other demographic variables, such as age and years of experience, as I study the relationship between those variables and medical-surgical nurses' intentions to stay in their roles. This study's results may further validate the concept of teamwork as essential to CAS, as noted in previous research.

The aligned definitions of teamwork and complex adaptive systems connect the theoretical framework to the aim of my study. I defined teamwork as a process of

interactions and attitudes between a group of agents acting together within an MS department, which can be found within, or even form, a CAS (Bragadóttir et al., 2023; Salas et al., 2008; Schmutz et al., 2019). Schmutz et al. (2019) described teamwork as a process, aligning with Plsek's description of a CAS as persons who are connected and interact with one another and the environment to impact outcomes (Plsek, 2001). Bragadóttir et al. (2023) suggested teamwork may be a process in which persons interact with one another and the outcome result included increased nurses' intentions to stay. I utilized the Nursing Teamwork Survey (NTS) to explore the characteristics of teamwork as described by Kalisch et al. (2010) and align teamwork behaviors to a CAS within an MS nursing unit. This study's results may further validate the concept of teamwork as essential to CAS, as noted in previous research.

Literature Review Related to Key Variables and Concepts

Teamwork

Nursing leaders have recently focused efforts on teamwork and work environments to improve nursing satisfaction to mitigate the increasing nursing shortage in the US. Bragadóttir et al. (2023) suggested teamwork contributes to a healthy work environment and job satisfaction. Additionally, a healthy work environment is often linked to nursing and patient outcomes, which have also been associated with nursing retention (Bragadóttir et al., 2023; Zaghloul et al., 2008). Al-Hamdan et al. (2017) found that a positive work environment was positively associated with nurses' intent to stay. In a systematic review and analysis of 31 articles on effective teamwork, Schmutz et al. (2019) found that teamwork had a medium effect on clinical performance (r=0.28),

consistent with the findings of Bragadóttir et al. (2023) and Zaghloul et al., (2008). Good teamwork is frequently mentioned in the literature as a contributor to improving nursing outcomes as well as clinical outcomes (Bragadóttir et al., 2023: Rosen et al., 2018; Zhao et al., 2020).

Teamwork is often mentioned in the literature as a strategy for improving the work environment, quality outcomes, and nurses' intentions to stay (Baker et al., 2006; Bragadóttir et al., 2023; Rosen et al., 2018; Zhao et al., 2020). For the purpose of this study, teamwork was defined as a process of interactions and attitudes between a group of agents acting together within an MS department, which can be found within, or even form, a CAS (Bragadóttir et al., 2023; Salas et al., 2008; Schmutz et al., 2019). Alternatively, poor teamwork processes may contribute to poor outcomes for the patients and the staff members (Cho et al., 2020; Cho et al., 2022; Needleman et al., 2020; Xyrichis & Ream, 2008). Cho et al. (2020) noted a negative work environment and poor patient outcomes often resulted in decreased job satisfaction, which can lead to decreased commitment to the organization.

In a quantitative descriptive study, Bragadóttir et al. (2023) used the Icelandic edition of the Nursing Teamwork Survey (NTS) survey tool to evaluate the relationship between job satisfaction and teamwork. After surveying 567 Icelandic nurses, using the NTS, Icelandic edition, logistical regression revealed that more experience on the unit, adequate staffing, and higher levels of teamwork were associated with higher job satisfaction (Braggadótir et al., 2023). For one additional unit increase in nursing teamwork scores, nurses were five times more likely to experience job satisfaction

(Bragadóttir et al., 2023). Additionally, an independent t-test revealed higher job satisfaction with higher scores in teamwork (Bragadóttir et al., 2023).

This was the first time the NTS survey tool was utilized in the Icelandic format, which may cause readers to question the strength of the survey results. However, Kalisch et al. (2010) established good psychometric properties of the tool in 2010, with the tool being used frequently over recent years, and results were consistent with additional literature. The psychometric properties of the NTS will be discussed in a later paragraph and section of this chapter, and the tool will be utilized for the survey in this study.

Kaiser and Westers (2017) also utilized the NTS to describe teamwork across multiple nursing specialties. This descriptive quantitative study of nursing teams included 1414 voluntary participants across a Healthcare system (Kaiser & Westers, 2017). Like other studies, Kaiser and Westers (2017) discussed the commonly found connection between teamwork, staffing, and patient safety in their review of the literature. Nurses with no plans to leave their role in a year scored significantly higher on the total teamwork score than those who planned to leave their role (Kaiser & Westers, 2017). Consistent with other literature, those who scored higher on teamwork also perceived higher levels of adequate staffing (Kaiser & Westers, 2017).

It is unclear if teamwork provides a perception of adequate staffing or if adequate staffing promotes the perception of teamwork. However, following a cross-sectional survey of 45 Australian nurses, Costello et al. (2021) suggested that leaders implement team-building strategies to promote a healthy work environment. Costello et al. (2021) described the survey results in the context of team scores across five domains of

teamwork. They concluded that effective teamwork promotes job satisfaction, patient safety, and efficiency, and ultimately improves the work environment (Costello et al., 2021). Although a limitation of this study was participant self-selection, findings were consistent with the studies of Braggadótir et al. (2023) and Kaiser and Westers (2017), contributing to the strength of the evidence for teamwork as a contributor to a positive work environment and a potential for improving nurses' intentions to stay in their role.

In an integrated review of 25 studies, Al Zamel et al. (2020) reported factors influencing nurses' intention to leave included job satisfaction and organizational commitment while factors associated with intent to stay included work environment, peer support, and job satisfaction. Bragadóttir et al. (2023) also suggested that job satisfaction and nursing retention were related and noted teamwork to be an additional contributor. While Bragadóttir did not mention peer support, it is logical to infer that peer support is a characteristic of teamwork. Within the NTS subscales, backup, a term for one of the subscales in the NTS, is described as activities of team support in the NTS subscales (Kalisch et al., 2010). Expanding on Al Zamel et al. (2020), Bragadóttir et al. (2023) linked the factor of job satisfaction to teamwork using the NTS. Consistent correlations throughout the literature between workload and teamwork provide relevance to the work of Al Zamel et al. (2020).

Zaheer et al. (2021) also evaluated turnover based on nurses' perceptions of leadership teamwork, turnover intention, and patient safety. In a mixed methods study of Canadian healthcare professionals, the Safety Attitudes Questionnaire teamwork climate scale and turnover intention scale were administered to 185 healthcare professionals for

quantitative analysis (Zaheer et al., 2021). Using the survey data and existing hospital Surveys on Patient Safety Culture, the bivariate analysis indicated higher perceptions of patient safety and teamwork served as predictors of lower turnover intention (Zaheer et al., 2021). The qualitative portion of Zaheer's study included semi-structured interviews of fifteen nurses. Qualitative findings supported the quantitative data with higher patient safety scores and higher teamwork resulting in lower turnover intention (Zaheer et al., 2021).

In addition to patient outcomes, work environment, and nursing job satisfaction, occupational fatigue, and burnout are topics often found associated with nursing attrition. Higher nurse-to-patient ratios and workloads contributed to burnout and fatigue and increased nurses' intentions to leave their roles (Al-Sabei et al., 2021; Cho et al., 2021; Phillips, 2020; Van Osch et al., 2018). However, effective teamwork may decrease the impact of workload and reduce stress that leads to fatigue and burnout (Al-Sabei et al., 2021; Cho et al., 2021). In a cross-sectional survey of 2113 Omanian nurses, Al-Sabei (2021) performed correlational data analyses and concluded that higher levels of interprofessional teamwork resulted in increased job satisfaction and decreased intentions to leave, with burnout and job satisfaction serving as mediators. Van Osch et al. (2018) also found a negative relationship between burnout and job stress in a qualitative study of thirteen emergency and critical care nurses. Relationships, teamwork, and camaraderie were mentioned as important to retaining nurses (Van Osch et al., 2018).

Similarly, Cho et al. (2022) studied the relationships between nursing, teamwork, workload, and fatigue using the NTS, the Quantitative Workload Inventory, and the

Occupational Fatigue Exhaustion Recovery scale. Assumption testing details were included in the analysis, adding strength to the findings, along with the consistency of results to other studies (Cho et al., 2022). High workloads were found to be significantly related to acute fatigue, as well as chronic fatigue through hierarchical regression modeling (Cho et al., 2022). In this cross-sectional survey, a convenience sample of 810 nurses revealed that nurses working in an environment with higher teamwork had reduced levels of fatigue (Cho et al., 2022). Fatigue had a significantly negative impact on teamwork in this cross-sectional survey of 810 US nurses (Cho et al., 2022). However, nurses working in an environment with higher teamwork had reduced levels of fatigue (Cho et al., 2022). Assumption testing details and consistency with results of other studies added strength to the findings of the study (Cho et al., 2022).

Nursing Teamwork Survey (NTS)

The NTS has been used frequently in studies on teamwork in recent years. The tool was published in 2010, after rigorous testing and validation (Kalisch et al. 2010; Bragadóttir et al., 2023). This tool was targeted to acute care nursing teams and was found to have good psychometric properties (Kalisch et al., 2010), making it relevant for this study. Nurses can score teamwork perception and performance on a Likert scale for five subscale categories including team leadership, team orientation, back-up behavior, adaptability, and mutual performance monitoring. The validity of the tool is described in more depth in Chapter 3.

Years of Experience and Age

Little data exists to validate years of experience or age as a significant contributor to nursing teamwork or nurses' intentions to stay. However, years of experience and age can be found in general discussions and noted in some of the research mentioned in the previous paragraphs. Bragadóttir et al. (2023) found that the variable years of experience was related to job satisfaction, noting, "Also, there was a significant relationship between years of experience on current unit and satisfaction with current position." Zaheer et al. (2021) found that more years of nursing experience and low staffing ratios enhance teamwork and patient safety perception in qualitative findings of a mixed methods study. Brook et al. (2019) noted turnover being an issue to address during a nurse's first year of practice. Taking this gap in the literature into consideration, these variables, years of experience and age, were incorporated into the research question, "What is the relationship between years of experience, age, teamwork, and MS nurses' intentions to stay in their role in an acute care hospital?" The following paragraphs are a review of recent literature on years of experience, age, and nurses' intentions to stay.

In a cross-sectional survey of 210 Korean nursing students, Kim et al. (2021) noted high turnover rates of new nurses, up to 60% in the first year. It was noted that a review of generations revealed a decline in altruistic and intrinsic values over recent years (Kim et al., 2021). The average age of participants was 22.8 ($\pm$ 1.22) years. Kim et al. (2021) concluded that clinical experience satisfaction was the primary predictor of turnover intention (χ^2= 7.93, P = 0.005). Steele-Moses (2021) found that increased years of age were noted to have a statistically significant effect on motivation, job satisfaction,

and work environment ($p < 0.001$). Older nurses were 22.4% more likely to stay (Steele-Moses, 2021).

It is important to understand how age and years of experience contribute to nurses' intentions to stay as nurse attrition rates appear to be higher amongst those with less experience and fewer years of age. Al-Sabei et al. (2021) reported that younger nurses have a greater intention to leave their roles than older nurses. Keith et al. (2021) performed an integrative review and found that visionary leadership, coworker relationships, professional growth, technology, recognition for work, and shared core values were essential for the retention of the millennial workforce. Millennial and boomer generation nurses had high rates of turnover within the profession, leaving new nurses to take on their roles without significant experience within the workforce to draw from for clinical knowledge and skills (Keith et al., 2021; Steele-Moses, 2021; Zaheer et al., 2021). This lack of experience may leave younger and less experienced nurses uncomfortable in their role and more likely to leave due to this discomfort or stress. Additionally, experienced nurses reported that new staff may negatively impact teamwork and patient safety (Zaheer et al., 2021). Kiel (2020) reported a 16% variance between the turnover rates of nurses aged twenty-five to thirty-four years versus those aged forty-five to fifty-four, with the younger group turning over at a rate of 28%. It is incumbent upon leaders to ensure that new nurses are prepared to transition their practice and to decrease the nursing shortage by understanding the role age plays in nurses' intentions to stay.

Medical-Surgical Nurses' Intentions to Stay

It is difficult to find tools that measure intent to stay. However, Myint et al. (2023) noted that organizational commitment serves as a measure of the strength of an individual's identification with an organization. With that in mind, the definition of MS nurses' intentions to stay within their role was defined in this study through the expression of commitment-related behaviors identified within the Organizational Commitment Questionnaire (OCQ; Mowday et al., 1979). Al-Hamden et al. (2017) noted the need for researchers to focus on job satisfaction and intent to stay among nurses.

Many studies have drawn links between job satisfaction and teamwork, yet few have provided evidence of a direct relationship between teamwork and nurses' intentions to stay in their roles (Van Osch et al., 2017). It is important to establish and note there is a difference between intentions to leave, turnover, intentions to stay in one's role, and retention. Nancarrow et al. (2014) suggested that intention to leave is a precursor to turnover and intention to stay precedes retention. However, the relationship between teamwork and intentions to leave, turnover, and retention is relevant to research on teamwork and intentions to stay, as some strategies to prevent intention to leave, or turnover may be common to strategies that promote intentions to stay, or retention (Nancarrow et al. 2014).

Myint et al. (2023) sought to understand the predictors of intent to stay amongst nursing faculty. In a cross-sectional study, 330 nursing instructors across 50 nursing schools were surveyed using validated tools, including the OCQ (Myint et al., 2023). Almost 70% of the instructors reported intent to stay with transformational leadership,

workload, job stress, and organizational commitment as predictors (Myint et al., 2023). Al-Hamden et al. (2017) found that for each one-unit increase in the total score of the Practice Environment Scale of the Nursing Work Index (PES-NWI), nursing job satisfaction increased by 1.3 points, validating the relationship between work environment and nurses' job satisfaction. Sapar and Oducado (2021) found that higher levels of job satisfaction were significantly related to intent to stay among nurses. The positive impact of job satisfaction on teamwork and intent to stay has been a consistent theme throughout this literature review.

Steele-Moses (2021) provided the Index of Workforce Satisfaction survey to 151 registered nurses and found only 56% of nurses intended to stay in their role for the next year. Age and work experience were significant contributors to the intent to stay (Steele-Moses, 2021). Regression analysis revealed that work satisfaction increased when nurses felt challenged in their roles, competent in their skills, satisfied with workplace activities, and were recognized (Steele-Moses, 2021). This supports the theory that discomfort in skill level may contribute to turnover amongst inexperienced nurses. Increased years of age were noted to have a statistically significant effect on motivation, job satisfaction, and work environment ($p < 0.001$). Older nurses were 22.4% more likely to stay (Steele-Moses, 2021).

To identify predictors of intention to stay, the North Dakota Center for Nursing's research team sent a self-administered 80-question survey to 21,031 nurses within the state, as well as conducted focus groups per purposeful sampling (Owens et al., 2022). In this mixed methods study, 727 nurses completed an online survey with 228 students and

49 nurses participating in focus groups. Consistent with other studies, burnout was associated with being less likely to stay while pay, organization policies, and autonomy were predictors of being more likely to stay (Phillips, 2020; Steele-Moses, 2021).

In a systematic review, Pressley and Garside (2020) found that nurses stay when job satisfaction and commitment to the organization are strong, similar to other studies discussed in previous paragraphs. Pressley and Garside (2020) also found that the factors contributing to intent to stay may vary for different generations. Teamwork and patient safety were found to be positive contributors to the intent to stay in most of the articles reviewed (Pressley & Garside, 2020).

Organizational Commitment Questionnaire

Organizational commitment and job satisfaction have been associated with nurses' intentions to stay (Al Zamel et al., 2020). The OCQ is a validated test that was administered to 2563 employees across a variety of organizations and professions to establish validity and reliability (Mowday et al., 1979). Mowday et al. (1979) noted the definition of organization commitment to be behaviors that "link an employee to the organization," and congruency of goals exists between the employee and the organization in a way that the employee "has a strong desire to be part of the organization." Mowday et al. (1979) argued that "organizational commitment is stronger than job satisfaction and goes beyond the tasks of the job, and that organizational commitment is longer lasting in nature." This makes the OCQ appealing for measuring nurses' intentions to stay.

Summary

The nursing workforce shortage has grown in recent years with significant negative impacts on patients, nurses, and the healthcare system overall with indications that the shortage will continue to grow (Al-Sabei et al., 2021; Buerhaus, 2021; McCarthy et al., 2021; U. S. Bureau of Labor Statistics, 2022). However, literature is lacking in the identification of specific tactics and strategies to improve nurses' intentions to stay in their roles. There is even less literature addressing these topics within the MS nursing population in the US who are working in acute care hospitals.

A significant amount of research does exist regarding burnout and the lack of supportive environments for nurses to flourish, resulting in nurses leaving their roles or the profession (Bragadóttir et al., 2023; Peters,2023; Phillips, 2020; Zaheer et al., 2021). Job satisfaction is frequently associated with a lower intent to leave. Studies on burnout, job satisfaction, fatigue, and work environment are often relevant to and appear to have been improved by teamwork, enhancing job satisfaction and nurses' intentions to stay in their role (Bragadóttir et al., 2023; Peters,2023; Phillips, 2020; Zaheer et al., 2021). Other factors improving job satisfaction included increased age and years of experience (Bragadóttir et al., 2023; Keith et al., 2021; Kiel, 2020; Kim et al., 2021; Steele-Moses, 2021; Zaheer et al., 2021). Puente-Palacios and Santo de Souza (2018) indicated a relationship exists between teamwork and organizational commitment. With age, years of experience, and teamwork often associated with job satisfaction, it is imperative to further explore these concepts and the relationship to MS nurses' intent to stay, specifically within acute care hospitals in the US.

Additionally, broader use of the OCQ and the NTS, used in congruence, may provide insight into the relationships between MS nurses' intentions to stay, teamwork, age, and years of experience to address current gaps in the literature. It appears that there has not been a study of these tools used this way and this may provide a first for the combined use of these tools within nursing. Workforce challenges make the identification of strategies to strengthen MS nurses' intentions to stay within acute care hospitals a priority for maintaining safe patient care.

In Chapter 3, I present the research design and rationale, population, data collection, instrumentation, data analysis plan, and threats to validity for studying the relationship between age, years of experience, teamwork, and MS nurses' intentions to stay in their roles in acute care hospitals.

Chapter 3: Research Methodology

Introduction

The purpose of this study was to explore the relationship between years of experience, age, teamwork, and MS nurses' intentions to stay in their roles in acute care hospitals. I intended to identify strategies that may mitigate the impacts of the current nursing shortage, which negatively impacts patient and nursing outcomes (Cho et al., 2020; Cho et al., 2021; Musy et al., 2021; Needelman et al., 2020). In Chapter 3, I present the research design and rationale, methodology, data analysis plan, and threats to validity.

Research Design and Rationale

The research design proposed for this study was a quantitative cross-sectional survey of MS nurses working in acute care hospitals. Research questions are noted as follows:

RQ1: What is the relationship between teamwork and MS nurses' intentions to stay in acute care hospitals?

$H_0 1$: There is no statistically significant relationship between teamwork and MS nurses' intentions to stay in acute care hospitals.

$H_a 1$: There is a statistically significant relationship between teamwork and MS nurses' intentions to stay in acute care hospitals.

RQ2: What is the relationship between years of experience, age, teamwork, and MS nurses' intentions to stay in acute care hospitals?

$H_0 2$: There is no statistically significant relationship between years of experience, age, teamwork, and nurses' intentions to stay in acute care hospitals.

H_a2: There is a statistically significant relationship between years of experience, age, teamwork, and nurses' intentions to stay in acute care hospitals.

I identified factors, or predictors, of MS nurses' intentions to stay in acute care hospital settings. The predictor variables included years of experience, age, and teamwork. MS nurses' intentions to stay was the dependent, or outcome, variable. Regression analysis provided evidence of nursing satisfaction and teamwork in similar studies and fits the research design for my study. (Bragadóttir et al., 2023; Zaheer et al., 2021).

Bivariate linear regression was conducted to answer research question one, with one predictor variable, teamwork, and the outcome variable MS nurses' intentions to stay. Multiple regression analysis was performed to answer the second research question and to understand the relationship between the dependent, or outcome, variable of MS nurses' intentions to stay and three predictor variables of years of experience, age, and teamwork. Improving MS nurses' intentions to stay is critical to improving nurse staffing on medical-surgical units and improving patient safety (Cho et al., 2020; Cho et al., 2021). Predicting the relationships and effect size of predictor variables on nurses' intentions to stay has been useful in past studies and may provide added knowledge to the nursing profession concerning the relationship of the variables chosen for this study (Al-Hambden et al., 2017; Al-Sabei et al., 2022; Bragadóttir et al., 2023; Cho et al., 2021; Cho et al., 2022; McCarthy et al., 2007; Myint et al., 2023; Zaheer et al., 2021).

Design Related Constraints

A cross-sectional design is key for facilitating timely research. However, timely research does not foster the same outcomes as an experimental and longitudinal design and was noted to be a constraint for this study (Cresswell & Cresswell, 2019). A second constraint exists with the use of convenience sampling methodology, which tends to prevent the inability to generalize the results across the entire population being studied. To mitigate this challenge, MS nurses were recruited from a hospital system across fifteen states. Cresswell and Cresswell (2019) indicate the larger the sample the more accurate, yet feasibility of time and cost are constraints for obtaining a truly robust sample. G*Power was utilized to determine the appropriate sample for this study (Faul et al., 2009). The following paragraphs further outline details of the research design, methodology, and recruitment of participants.

Methodology

Regression modeling, based on the number of predictors for each question, was intended to identify factors that predict MS nurses' intentions to stay. I used bivariate linear regression and multiple regression to answer the research questions listed in this chapter and Chapter 1. Using regression modeling to identify predictive relationships between variables, and the strengths of those relationships, can guide actions required to affect an intended outcome, such as MS nurses' intentions to stay (Kellar & Kelvin, 2013; Warner, 2013). The following paragraph includes the variables for this study.

Variables

I defined the outcome variable, MS nurses' intentions to stay, as the expression of organizational commitment. I measured MS nurses' intentions to stay using the OCQ (Mowday et al., 1979). Predictor variables included years of experience, age, and teamwork. I measured years of experience by the total years of experience as an RN or LPN, which was part of the demographic data. Age was the nurse's true age from birth to the current year of the study. Teamwork was measured using the NTS (Kalisch et al., 2010) and was defined as a process of interactions and agents acting together within an MS department, which can be found within or even from a CAS (Bragadóttir et al., 2023; Salas et al., 2008; Schmutz et al., 2019).

Population

The population of nurses identified for this study included nurses working in a medical-surgical setting of acute care hospitals in the US at the time of the survey. Medical-surgical nurse participants must have been currently employed in an MS nursing unit for at least 6 months. Demographics and characteristics of the participants were collected at the time of the survey and were not specified for inclusion in the study.

I used convenience and snowball sampling by asking leaders to post a link to the survey on hospital communication boards of medical-surgical departments within a hospital system. Institutional Review Board (IRB) approval at Walden University and the partner healthcare system was obtained before posting the links. Using G*Power, (α= 0.5, medium effect size $f^2 = 0.15$, and power = 0.80) yielded a sample size of 77 participants

(Faul et al., 2009). The goal for participant recruitment was to target 100 participants to ensure a full sample of 77 participants.

Procedures for Recruitment, Participation, and Data Collection

Nurse leaders across a seventy-hospital system were asked to post a recruitment flyer on medical-surgical department communication boards and send a direct message to staff to encourage enrollment of eligible nurses. Those leaders were provided with a QR code and an internet link to the survey at SurveyMonkey for sharing with eligible staff. Nurses were allowed to share the link with other nurses who met the criteria. The recruitment letter (Appendix A) and the Survey Monkey directions included the process for providing anonymous survey answers. Participant responses were de-identified and coded to assure confidentiality (Nayak & Narayan, 2019). Information provided to the participants included the aim of the study and my contact information to encourage objective and sincere responses and to prevent bias in the answers provided by participants (Queirós et al., 2017). I deidentified all data, and the survey answers were linked to a participant code. Informed consent for participation in the survey was obtained and included in the SurveyMonkey instructions, outlined on the SurveyMonkey website.

In addition to the NTS and OCQ, participants were asked for demographic data. Demographic data includes age, highest education level, years of experience on the current unit, and years of experience as a nurse (see Appendix C). Demographic questions preceded the NTS and OCQ survey questions.

Instrumentation and Operationalization of Constructs

I chose the NTS and the OCQ for this study. The NTS is specific to measuring the teamwork of acute care nursing teams, and the OCQ is a measurement of an employee's commitment or loyalty to an organization. These tools provide an opportunity to explore the relationship between teamwork and organizational commitment in addition to collecting demographic data or unit characteristics that may contribute to scores. The predictor variables, years of experience, and age were numeric expressions of time and measured as continuous predictor variables.

Nursing Teamwork Survey (NTS)

Teamwork was quantified and measured from the participants' scores on thirty-three teamwork-related questions, rated from 0 to 4 on a Likert scale (Kalisch et al., 2010). Zero indicates that teamwork behavior never happens, 1 = the behavior rarely happens, 2 = the behavior happens 25% of the time, 3 = 75% of the time, and 4 = the behavior is always present (Kalisch et al., 2010). The total mean score of teamwork from respondents for all 33 questions was treated as a continuous variable for analyses as the total score is numeric, and a one-unit increase or decrease in the score provides meaning (Laerd, 2015).

The NTS was developed in response to a lack of available tools to measure nursing teamwork and was tested and proven to have good psychometric properties (Kalisch et al., 2010). Kalisch et al. (2010) administered the NTS to 1758 inpatient nurses to test validity and reliability. The tool has historically served to identify characteristics of teamwork behaviors and provide insight into teamwork perception (Kalisch et al.,

2010). The content validity index was 91.2% (Kalisch et al., 2010). Permission to use this tool is noted in Appendix D. A sample of questions from the NTS is noted in Appendix E.

The Safety Attitudes Questionnaire (SAQ) served as a measure of convergent validity, and the tests were administered to 82 staff nurses (Kalisch et al., 2010). Test-retest reliability and confirmatory factor analysis (CFA) served to finalize the questions accepted into the final tool. Cronbach's alpha supported the reliability of the tool (> 0.7 on one of the five subscales and > 0.8 on four of the five subscales). Concurrent validity, through ANOVA testing, indicated nursing staff with satisfactory levels of teamwork had higher scores on the NTS ($r = 0.633$, $p < 0.001$). Kalish et al. (2010) completed coefficient tests between the NTS and other previously validated tools, specifically the teamwork subscale of the Safety Attitudes Questionnaire (SAQ) (Kalisch et al., 2010).

Organizational Commitment Questionnaire (OCQ)

Nurses' intentions to stay was the outcome variable of this study and was expressed as a measurement of participants' responses to the OCQ questions. Like the NTS, a mean of the total score was used to represent nurses' intentions to stay as a continuous variable. The OCQ was previously validated through test-retest, reliability, and validity measures (Mowday et al., 1979). Mowday et al. (1979) described organizational commitment as behaviors that "link an employee to the organization" (p. 225). Employee attitudes of commitment are differentiated from job satisfaction, with commitment being more stable over time and goals being aligned between the employee

and the organization in a way that the employee “has a strong desire to be part of the organization” (Mowday et al., 1979, p. 226).

Mowday et al. (1979) noted that organizational commitment is a response to the environment and is long-lasting, while job satisfaction is a response to tasks and can vary with the day-to-day variation of those tasks. This made the OCQ appealing for measuring intention to stay. The OCQ consists of fifteen items scored on a 7-point Likert scale. *Cronbach’s alpha* ranged from .83-.93 across the items for reliability with strong correlations for convergent validity (median .70) (Mowday et al., 1979). Strengths of the tool included its validity and use in previous studies. Limitations of the tool include the potential for respondents to provide inaccurate answers or to feel threatened using the tool within their workplace (Mowday et al., 1979). The tool can be found in the public domain (Appendix F). A sample of questions from the tool can be found in Appendix G.

Data Analysis Plan

I conducted statistical analysis of the data using bivariate linear and multiple regression to measure nursing years of experience, age, teamwork, and intent to stay scores from each participant's response. I utilized the IBM- Statistical Package for Social Sciences (SPSS) version 29 for all data analyses. I screened the raw data and evaluated for completeness. I assessed missing data for the ability to include the data responses in the survey results and analyses. Missing demographic data was noted in a variance of the sample size (n).

Statistical Tests and Procedures

I used SPSS version 29 to analyze demographic variables, noting the mean and standard deviation for the continuous variables of total years of experience nursing experience, years of experience in the current unit, and age. I conducted regression analyses were used to explore relationships between predictor variables and the outcome. Predictor variables included years of experience, age, and teamwork. The outcome variable was MS nurses' intentions to stay. I tested the assumptions for bivariate linear regression of research question one, which included testing the assumptions for a single independent variable, a single dependent variable, bivariate linear relationships between the variables, independence of observations, lack of significant outliers, homoscedasticity of residuals, and normal distribution of data (Laerd Statistics, 2015). I tested the assumptions for multiple regression for research question two which included verification of a continuous dependent variable, two or more independent variables, independence of observations, linearity between the dependent variable and each independent variable, homoscedasticity of residuals, a lack of multicollinearity in the data, and no significant outliers (Laerd Statistics, 2015).

Research Questions and Hypothesis Testing

Research Question 1

RQ1: What is the relationship between teamwork and MS nurses' intentions to stay in acute care hospitals?

$H_0 1$: There is no statistically significant relationship between teamwork and MS nurses' intentions to stay in acute care hospitals.

H_a1: There is a statistically significant relationship between teamwork and MS nurses' intentions to stay in acute care hospitals.

I uploaded survey data into SPSS version 29 for assumption testing and bivariate linear regression analyses to determine the ability to accept or reject the null hypothesis for research question one. After uploading the data, I performed an analysis of the predictor variable teamwork (plotted on the X axis) on the outcome variable MS nurses' intentions to stay (plotted on the Y axis). The analysis included visualization of a scatter plot to assess for a positive and bivariate linear relationships between the two variables. Further bivariate linear regression analysis in SPSS version 29 was performed to obtain a model summary where the R^2 (or the strength of the relationship) could be evaluated to indicate the percentage of variance in teamwork that predicts or explains MS nurses' intentions to stay, as well as evaluation of an ANOVA table to determine statistical significance ($p < 0.05$) of the model (Laerd, 2015).

I provided evidence for rejection of the null hypothesis and acceptance of the alternative hypothesis. The strength and nature of the relationship between variables were noted and visualized by the increase or decrease of nurses' intentions to stay (Y on the scatter plot) as teamwork increases (X on the scatter plot). For a significant relationship between teamwork and nurses' intentions to stay, I reported *F* and *p* values and the effect size (Laerd, 2015), displaying the results visually on a scatter plot.

Research Question 2

RQ2: What is the relationship between years of experience, age, teamwork, and MS nurses' intentions to stay in acute care hospitals?

$H_0 2$: There is no statistically significant relationship between years of experience, age, teamwork, and nurses' intentions to stay in acute care hospitals.

$H_a 2$: There is a statistically significant relationship between years of experience, age, teamwork, and nurses' intentions to stay in acute care hospitals.

I utilized SPSS version 29 to test the assumptions for multiple regression. I uploaded the survey data directly into SPSS for multiple regression analyses to be performed on the data. I evaluated the model summary and ANOVA tables for fit, with R^2, effect size, and significance (p-value) results reported (Laerd, 2015). A significant ($p < 0.05$) model suggested that the null hypothesis could be rejected. I also evaluated and reported slope coefficients at a 95% CI (Laerd, 2015) for each predictor or independent variable noting the relationships as either positive or negative. Like research question one, the research design for question two included reporting results for the F, R^2, and p values for all variables and the regression coefficients.

Threats to Validity

Threats to External Validity

I used convenience sampling to recruit MS nurses from a large hospital system, leaving the potential for bias on the topic. Convenience sampling poses a threat to the generalizability of the results to the entire MS nursing population (Cresswell & Cresswell, 2018). To mitigate this threat, participants were included from a healthcare system in multiple states, and power analysis was utilized to determine the sample size. However, participants' experiences and characteristics from this health system may vary from nurses in other acute care settings or systems.

Another threat to external validity was the time-limited nature of the study. The cross-sectional nature of the study prevents the ability to generalize the results to past or future time frames. The study should be repeated to ensure the validity of the findings (Cresswell & Cresswell, 2018).

Threats to Internal Validity

Population and convenience sampling could serve as a threat to internal validity as well as external validity (Cresswell & Cresswell, 2018). As noted in the previous paragraph, the lack of random selection of the sample creates the possibility of common characteristics of the participants that may not be representative of all MS nurses. There are few other internal threats to the study due to the cross-sectional design and the time-limited nature of the survey. However, there are other potential ethical and construct validity concerns as noted in the next paragraphs.

Threats to Construct or Statistical Conclusion Validity

Construct validity arises with poorly defined variables or inadequate statistical power (Cresswell & Cresswell, 2018). To ensure the accuracy of data analysis and interpretation, validated survey tools are used which assist in the consistency of variable definitions and measurements. G*Power was used to determine statistical power and to ensure the population size was large enough for accuracy in analyses.

Ethical Procedures

The Institutional Review Board (IRB) coordinator for my partner healthcare system provided a preliminary agreement for this study contingent upon completion of the study proposal and submission of documents required by the organization. I received

IRB approval from Walden University (approval number 07-18-24-0724204). To protect human participants, all data were de-identified and kept confidential on a computer that is secure and does not leave my home. My computer has been and will remain password protected with no one having access other than myself. Additionally, it remains secure at all times.

Participants were informed that participation was voluntary, and their identity would be protected. The risk for emotional upset was low considering the voluntary nature of the study, and the participant could skip questions or end participation at any point in the survey. Survey participants were provided contact information for Walden University's Research Participant Advocate within the flyer to discuss concerns or rights as respondents to the survey. Data will be stored for five years and destroyed according to IRB requirements. Recruitment of participants was limited to those hospitals where I did not have a leadership role to prevent researcher or participant bias.

Summary

A quantitative cross-sectional survey research design was planned to understand the relationships between years of experience, age, teamwork, and MS nurses' intentions to stay in their roles. Respondents were invited to participate by the Chief Nursing Officers of seventy hospitals within a hospital organization, in an attempt to enroll at least 77 respondents to ensure validity of the survey. The survey consisted of questions from the NTS and the OCQ. Respondents were asked to measure the level of teamwork experienced in their current MS department using the NTS (Kalisch et al., 2010) and their intent to stay in their current role using the OCQ (Mowday et al., 1979). Permission from

the organization's IRB and Walden University's IRB was obtained before the commencement of the study. The survey was conducted via SurveyMonkey with linear and multiple regression analyses to determine if age, years of experience, or teamwork predicted an MS nurse's intention to stay in the MS role. Ethical issues were addressed and threats to validity were mitigated. In Chapter 4, I present the results of my study.

Chapter 4: Results

Introduction

The purpose of this study was to determine if a relationship exists between teamwork, age, years of experience, and MS nurses' intentions to stay in their roles in acute care hospitals. I provide detailed bivariate linear and multiple regression analyses for the following research questions and hypotheses:

RQ1: What is the relationship between teamwork and MS nurses' intentions to stay in acute care hospitals?

H_0*1*: There is no statistically significant relationship between teamwork and MS nurses' intentions to stay in acute care hospitals.

H_a1: There is a statistically significant relationship between teamwork and MS nurses' intentions to stay in acute care hospitals.

RQ2: What is the relationship between MS nurses' years of experience, age, teamwork, and MS nurses' intentions to stay in acute care hospitals?

H_0*2*: There is no statistically significant relationship between MS nurses' years of experience, age, teamwork, and nurses' intentions to stay in acute care hospitals.

H_a2: There is a statistically significant relationship between MS nurses' years of experience, age, teamwork, and nurses' intentions to stay in acute care hospitals.

I describe the survey population, recruitment and response rates, univariate analysis, demographics, descriptive statistics, and statistical analysis of SurveyMonkey data responses to demographic questions, the NTS, and the OCQ.

Data Collection

Time Frame, Recruitment, and Response Rates

All data were collected via SurveyMonkey. The survey opened and data collection started on July 18, 2024, in partnership with an acute care hospital organization employing MS nurses across several states. The (masked) partner site served as the Institutional Review Board (IRB) of record at the onset of data collection. Chief nursing officers (CNOs) of the partner site were asked (Appendix A) to share a flyer (Appendix B) with the MS nurses of their organization for participant recruitment. Recruitment of MS nurses at these acute care hospitals was completely voluntary and anonymous. The flyer provided study information, the SurveyMonkey link, and a quick response (QR) code for participant convenience. A goal of 77 responses was set after G*power analysis ($f^2 = 0.15$, $\alpha = 0.05$, power= 0.80) indicated a minimum of 55 respondents were needed to appropriately power research question one (one predictor), and 77 respondents were required for research question two (three predictors). Recruitment continued at the partner site through August 5, 2024, with only 22 responses (29% of the goal).

Discrepancies in Data

To increase response rates, a change of procedure was requested on August 9, 2024, with a transition of the IRB of record from the partner site to Walden University. I have included a modified flyer in Appendix B, distributed by the partner site, in order to mask the identity of the partner site for publication of this study in Scholarworks. I modified the flyer, seen in Appendix B, to remove the partner site's IRB contact information and only include my name and contact information.

This change of procedure was requested for broader recruitment of MS nurses through an invitation on social media forums and was approved by the Walden IRB on October 1, 2024. The SurveyMonkey then remained open through November 15, 2024. During that time, an additional 60 participants responded to the survey, with some incomplete responses included in the sample. The new procedure included posting a recruitment invitation (Appendix H) for potential participants on LinkedIn and Facebook. Colleagues were also asked to share the survey with other known colleagues who may be potential participants. All participation remained voluntary, and there were no changes to the survey content, other than the new IRB information.

I modified the informed consent with the change of procedure to meet Walden University's requirements for the social media invitation. Informed consent from the partner site was a statement that consent was inferred after reading the survey information and responding to the invite. The partner site considered the survey to be low risk and waived any additional consent for those participating within their organization.

The variable age was originally intended to be collected as a continuous variable, defined as a numeric value of the number of years that have passed from the year of birth to the current year (2024). However, the partner IRB required that I only collect age by grouping respondents into categories. For that reason, I designed the survey to collect age in 5-year intervals starting at 20-25 years through the final group of 61- 65 years, and then those who are more than 65 years of age. In my analysis, I transformed those original responses into three groups, labeled as young adult (ages 20-35 years), middle adult (ages 36-55 years), and mature adult (56 years and older). Similar age groups have

been utilized for analysis of intent to stay and I used those examples as a model for this decision (Bragadóttir et al., 2023; Cowden & Cummings, 2015; Steele-Moses, 2021).

I originally planned to de-identify data; however, it was possible within SurveyMonkey to implement the survey as completely anonymous. Respondents did not provide any identifying data in the survey, and I chose options within SurveyMonkey that prevented the collection of any internet addresses, names, or email addresses of the participants.

Descriptive and Demographic Characteristics of the Sample Population

MS nurses from the partner site and those who were exposed to the LinkedIn and Facebook invitations were the respondents of the survey. Sixty-five participants responded to the inclusion criteria indicating they were currently employed as an MS nurse. Another 8 indicated they were not MS nurses. However, two of those respondents stated no, indicating they were leaders in an MS unit. The remaining six respondents who answered "no" did not provide clarity in their role on an MS unit or meeting of inclusion criteria for the survey. Response rates varied by question as respondents were instructed to skip any question they were not comfortable answering.

Participants reported an average of 12.13 years of experience (SD=9.324; n=66) with the largest age group being the middle adult. Middle adults, aged 36–55 years made up 48% of the sample. The majority of nurses held a baccalaureate degree (41%; n=34), followed by an associate degree (33%, n=27). The remaining 26% (n=12) included one Licensed Practical Nurse, two doctorate-prepared nurses, seven master-prepared nurses, and two diploma nurses. Females made up 80.5% of the respondents, 19.5% were male,

and 1.5 % listed their gender as other. Seventy-four respondents answered the question about years of tenure in their current department (< 1 year = 12.2%; 1-2 years = 22%; 2-5 years = 20.7%; 5-10 years = 13.4%; > 5 years = 22%; 10% did not answer). The majority of participants worked 12 hours per day on the day shift, with 61% of respondents reporting working at least one overtime shift per month.

Sample Comparison to the Population of Interest

According to the Academy of Medical-Surgical Nurses (2019), nurses represent the largest nursing workforce (21%; 600,000 nurses). Participants of this survey verified the inclusion criteria as an MS nurse, except for eight responses. Males, in this study, responded at a rate of 20% which is slightly higher than the 11% of males reported to make up the nursing population in the US (American Association of Colleges of Nursing, 2024). According to the American Association of Colleges of Nursing (2024), most nurses enter the profession with a baccalaureate degree, consistent with the sample of this survey. However, it was difficult to determine how proportional the sample was in comparison to the broader MS population since most public statistics are for the entire nursing workforce.

Univariate Analysis

I performed univariate analysis for the OCQ, NTS, subscales of the NTS, years of experience, and age which can be found in Table 1. The five subscales of the 33-question NTS include mutual trust, team orientation, backup, shared mental model, and team leadership (sample questions can be found in Appendix E). The mean scores, median, and mode for the subscales, along with key descriptive data, are included in Table 1.

Subscales were not used in the analyses of the research questions. However, they were included in Table 1 to demonstrate the mean score themes included within the NTS. Normal univariate distribution of the NTS, OCQ, and years of experience can be seen as histograms in Figures 1, 2, and 3.

Table 1

Univariate and Descriptive Analysis

Variable	Mean	Median	Mode	*SD*	*n*
OCQ	4.75	4.70	4.0	1.13	82
NTS	3.50	3.58	3.3	.771	75
Mutual Trust	3.49	3.57	3.4	.875	75
Team Orientation	3.28	3.33	3.9	.850	75
Backup	3.45	3.50	3.2	.833	75
Shared Mental Model	3.82	3.86	4.0	.642	75
Team Leadership	3.49	3.75	4.0	1.06	75
Years of Experience	12.13	11.0	8.0	9.32	66
Young Adult (20-35 yrs)					27
Middle Adult (36-55 yrs)					39
Mature Adult (over 55 yrs)					8

Note. The OCQ, NTS, Team Orientation, and Backup all had more than one mode, and the smallest is shown here.

Figure 1

Normal Distribution of Mean NTS

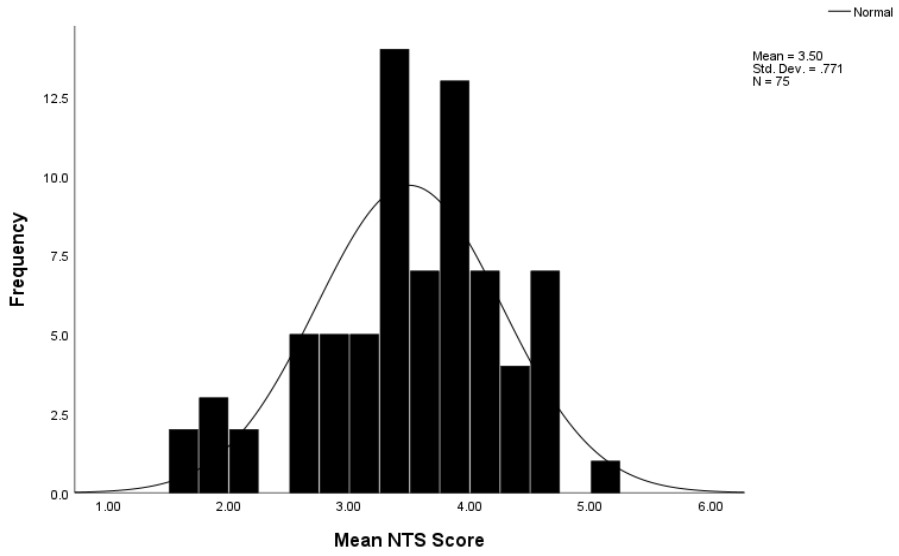


Figure 2

Normal Distribution of Mean OCQ

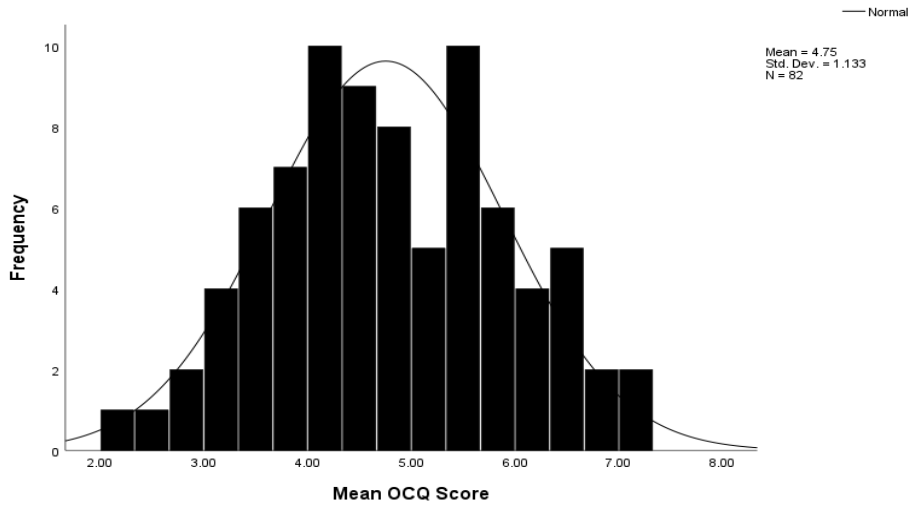
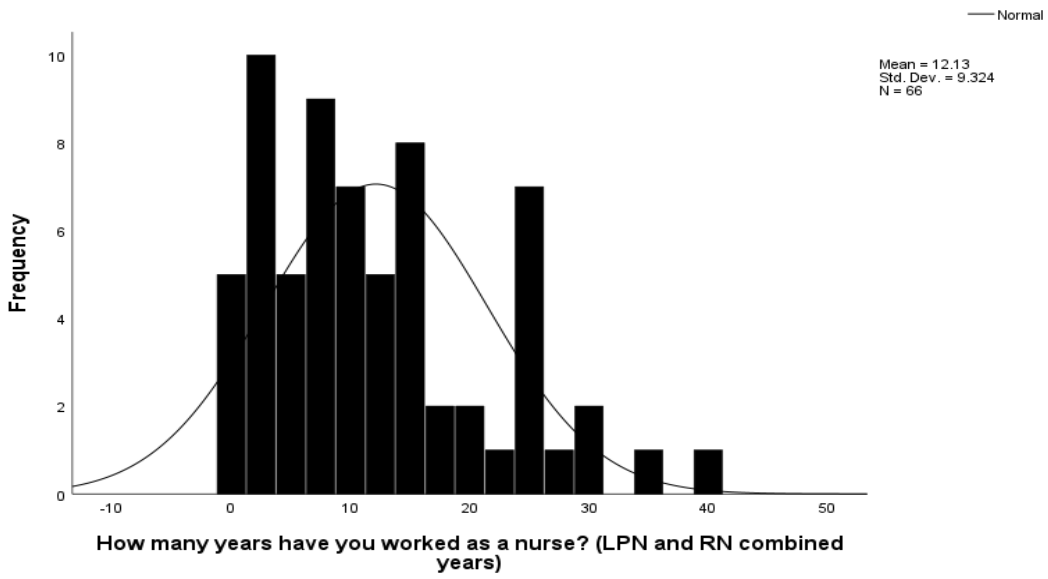


Figure 3

Normal Distribution of Years of Experience



Results

All data analyses were completed on my personal laptop computer, which was password-protected. Data will be stored for five years, and then permanently deleted after that time period. The survey data included demographic data and responses to the NTS and the OCQ. Internal consistency was completed for both survey tools in SPSS (version 29). Cronbach's alpha was found to be 0.970 for the NTS and 0.877 for the OCQ, establishing reliability in my sample. The following paragraphs provide an analysis of results by research question.

Research Question One

RQ1: What is the relationship between teamwork and MS nurses' intentions to stay in acute care hospitals?

H_01: There is no statistically significant relationship between teamwork and MS nurses' intentions to stay in acute care hospitals.

H_a1: There is a statistically significant relationship between teamwork and MS nurses' intentions to stay in acute care hospitals.

Descriptive Statistics (RQ1)

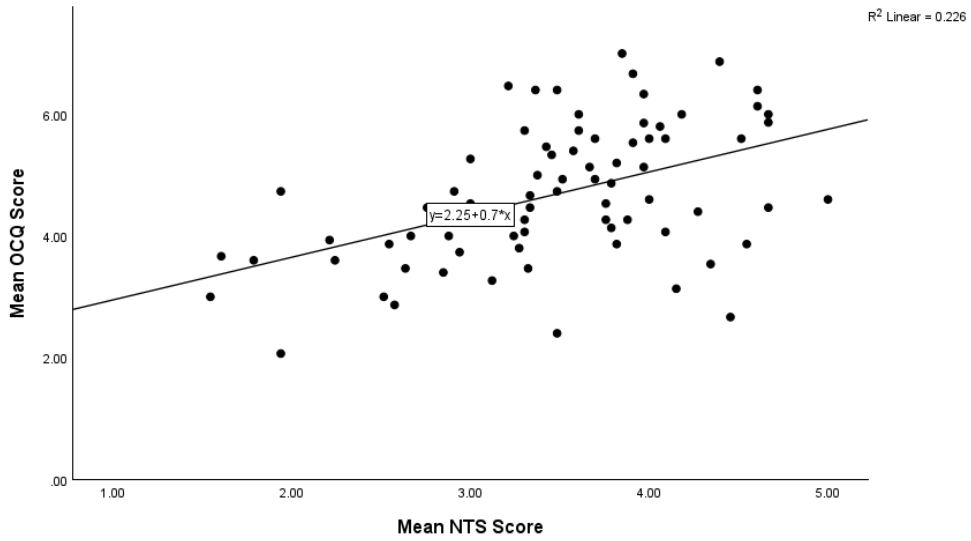
Variables included in RQ1 are the dependent variable, nurses' intentions to stay (represented by the mean OCQ score), and the independent, or predictor, variable teamwork (represented by the mean NTS score). Fifty-five responses were needed to achieve the minimum power desired (0.80) for this question to reduce the risk of a type II error. The means, standard deviations, medians, and total (n) for each variable are displayed in Table 1.

Statistical Assumptions (RQ1)

Seven assumptions of bivariate linear regression were tested prior to statistical analysis. Assumptions one and two were met with the analysis including a continuous dependent and independent variable. Both variables were measured on a Likert scale, typically ordinal, yet having five levels or more they were treated as continuous for this analysis (Laerd Statistics, 2015). The scatterplot in Figure 4 is a visual representation of assumption three (RQ1), showing a linear relationship between the dependent and independent variables. A linear relationship was established upon visual inspection of this figure, meeting the third assumption.

Figure 4

(RQ1): Linear Relationship Between Mean OCQ and Mean NTS Score



Assumptions four through seven were achieved by performing the linear regression analysis in SPSS. A Durbin-Watson statistic of 1.787 indicated independence of residuals (errors), meeting assumption four. As seen in Figure 4, there are no significant outliers, also indicated by a lack of casewise diagnostics present in the data output, meeting assumption five. A scatterplot of standardized residuals against the standardized predicted values, shown in Figure 5, indicates there is no violation of homoscedasticity, meeting assumption six. Errors of prediction are equally distributed across the plot points and exhibit no pattern. For the final assumption, a histogram (Figure 6) and P-P plot (Figure 7) were generated within the linear regression output to determine if residuals were normally distributed.

Figure 5

(RQ1): OCQ Standardized Residuals Against Standardized Predicted Values

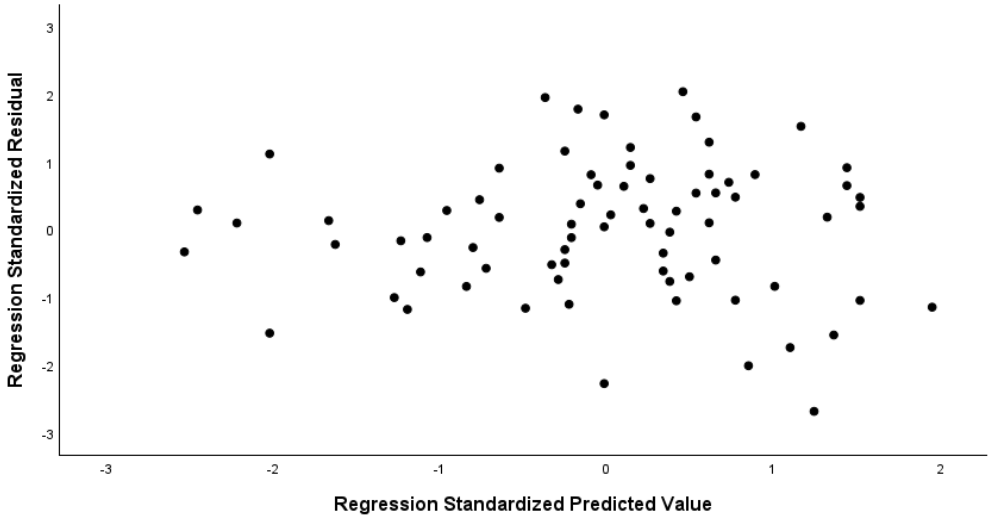


Figure 6

(RQ1): Normality of Residuals (Mean OCQ)

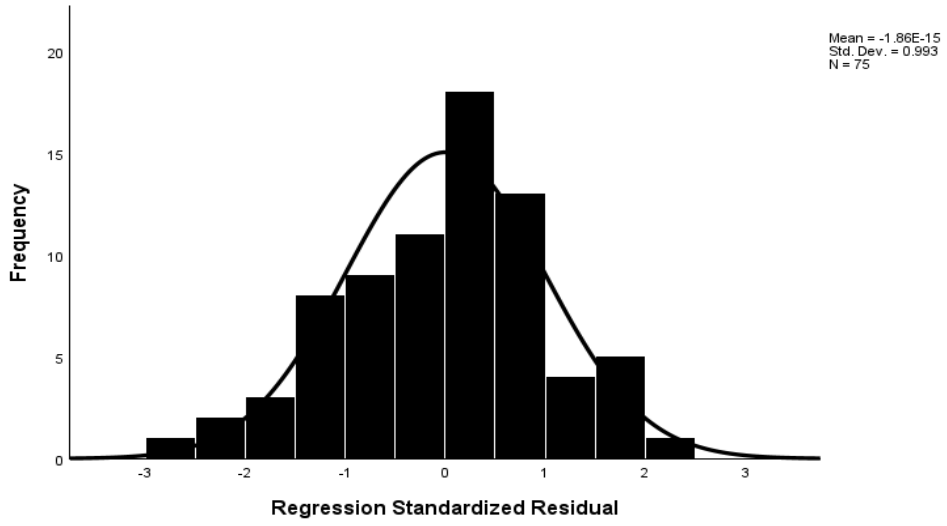
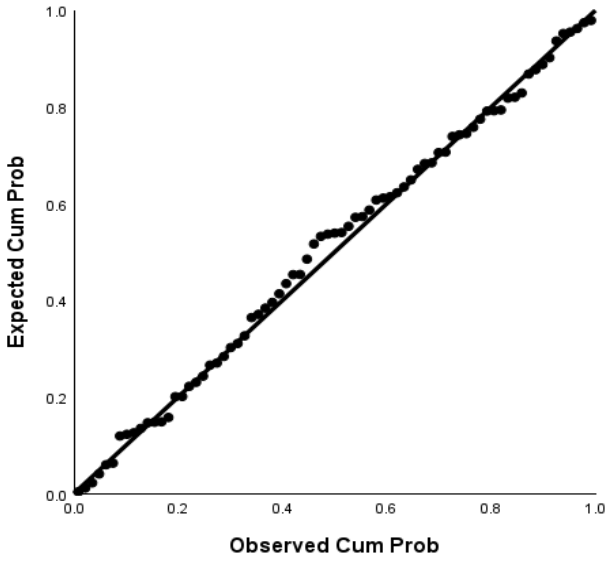


Figure 7

(RQ1): Normal P-P Plot of Regression Standardized Residuals (OCQ)



Statistical Analysis Findings (RQ1)

In the regression model summary, teamwork explained 22.6% (R^2 =0.226) of the variation in MS nurses' intentions to stay in their role in acute care hospitals (measured by OCQ). The adjusted R^2 = .216 indicating a medium effect (Laerd, 2015). The mean NTS score (teamwork) statistically significantly predicted MS nurses' intentions to stay in their acute care roles F (1,73) = 21.35, p < .001. The coefficient for the mean NTS score (0.701) was statistically significant (p < 0.001) with a confidence interval (CI) of 95%. There is a positive linear relationship between the mean OCQ and mean NTS (Figure 4). For every one-unit increase in the mean NTS score (teamwork), there is a 0.701 increase in the mean OCQ (MS nurses' intentions to stay in their acute care role). In summary, the

model was fit and statistically significant, allowing for the rejection of the null hypothesis.

Research Question Two

RQ2: What is the relationship between MS nurses' years of experience, age, teamwork, and MS nurses' intentions to stay in acute care hospitals?

$H_0 2$: There is no statistically significant relationship between MS nurses' years of experience, age, teamwork, and nurses' intentions to stay in acute care hospitals.

$H_a 2$: There is a statistically significant relationship between MS nurses' years of experience, age, teamwork, and nurses' intentions to stay in acute care hospitals.

Descriptive Statistics (RQ2)

Variables included in RQ2 were the mean OCQ score (dependent variable), age, years of experience, and the mean NTS score. Descriptive and univariate analyses of those variables are displayed in Table 1. For RQ2, 77 participants were required to achieve a power of (.80) using G*Power analysis software. The overall response rate included 82 participants. However, it is important to note that some respondents did not answer every question as noted by the (n=66) for the variables included in RQ2. I recalculated the power for 66 respondents with a result of (.72) and noted that results could be underpowered (Kang, 2021).

Statistical Assumptions (RQ2)

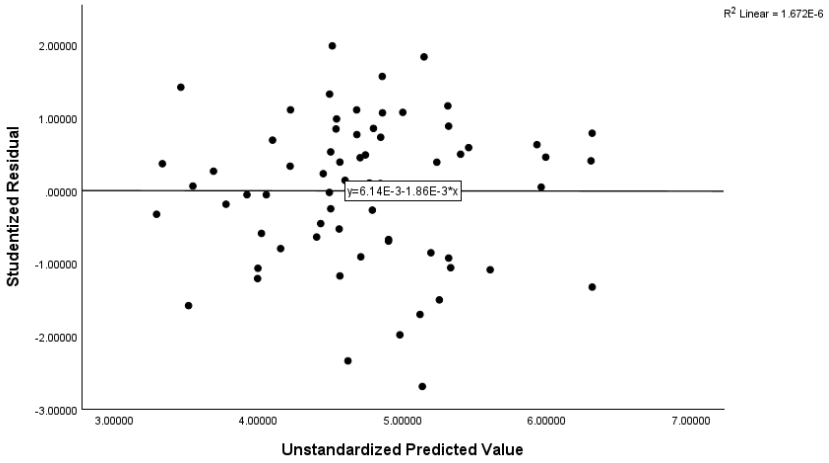
Eight assumptions were met before running the statistical analysis for RQ2. The first assumption was met by having one dependent variable, mean OCQ (serving to measure MS nurses' intentions to stay in acute care hospitals) measured at the continuous

level. Assumption two was because I had three predictor variables (age, years of experience, and teamwork), which were measured at the continuous or nominal level. Years of experience and teamwork (measured by the mean NTS) are continuous variables and age is a nominal variable with three levels or categories. The mean OCQ and mean NTS were ordinal variables scored by respondents on a Likert scale with five or more levels. I measured both as continuous scale variables (Laerd, 2015).

To test the remaining assumptions, I analyzed the data for independence of residuals with a resulting Durbin-Watson statistic of 1.872, meeting the third assumption. Assumption four was not violated as I visualized a linear relationship (mean OCQ and mean NTS, mean OCQ and mature adult, mean OCQ and years of experience). There was no linear relationship between mean OCQ and each independent variable and the dependent variable collectively (Figure 8). No linear relationship does not fail to meet the assumption of linearity (Laerd, 2015).

Figure 8

(RQ2): Linearity Between Dependent and Independent Variables



Using Figure 8, I checked for the presence of homoscedasticity (the points on the plot do not have a funnel or fan-shaped pattern, validating that assumption five was not violated. There were no correlations of the variables with a value greater than 0.7 or a Tolerance less than 0.1, meeting assumption six for no multicollinearity. There were no significant outliers, no studentized residuals greater than $\pm$ 3 standard deviations, and no case-wise diagnostics. One leverage point greater than the threshold of 0.2 (0.267) was identified; however, I did not remove the one leverage point and continued with the analysis as the one point was 0.267. All other leverage points were below 0.2. Cook's distance did not have values above 1. With the one value outside of the range (1 leverage point of 0.267), I verified assumption seven was met and continued with the assumption testing. I visualized the histogram and P-P Plot seen in Figures 9 and 10 (respectively), and validated assumption eight was met, and the residuals are normally distributed.

Figure 9

(RQ2): Normal Distribution of Residuals

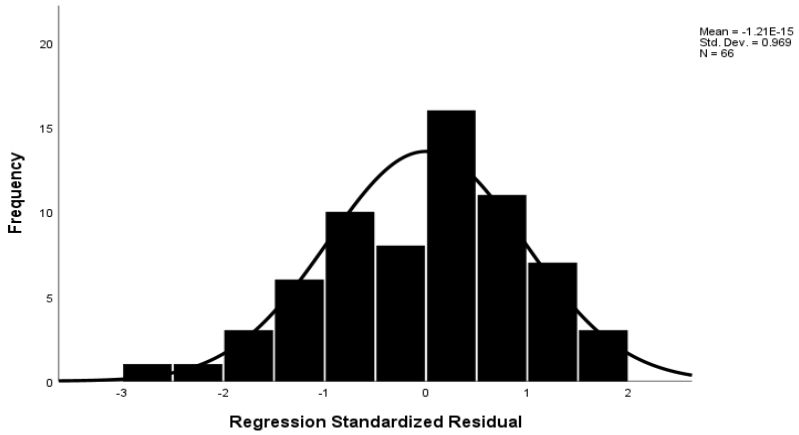
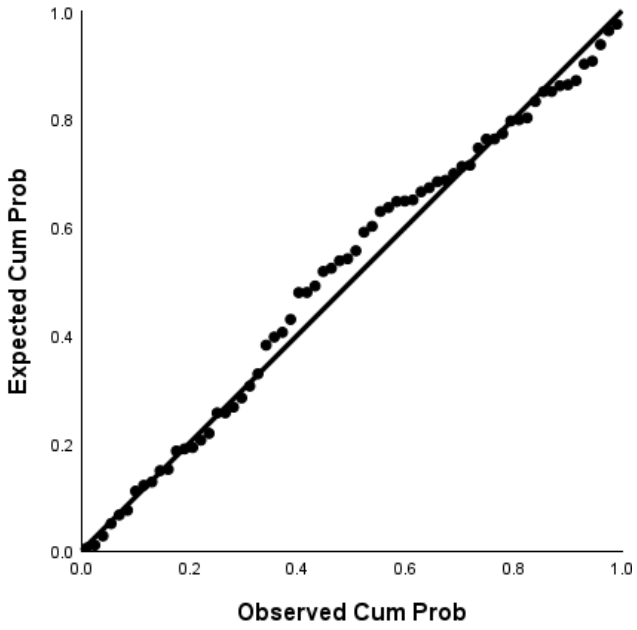


Figure 10

(RQ2): Normal Distribution P-P Plot Standardized Residuals



Statistical Analysis (RQ2)

I analyzed the model summary and found $R^2 = 0.360$ and an adjusted $R^2 = 0.318$. The independent variables (age, years of experience, and mean NTS) explained 31.8% of the variance in the mean OCQ with a medium effect size ($R^2 = 0.320$). I noted that the multiple regression model was a good fit. Age, years of experience, and mean NTS statistically predicted the mean OCQ, $F(4, 61) = 8.579$, $p < 0.001$. Therefore, the null hypothesis was rejected.

Further analysis of the coefficients revealed a statistical significance of the slope coefficient for the mature adult ($p = 0.003$) and for teamwork ($p < 0.001$). For mature

adults, with every 1 year increase in age (positive relationship), the mean OCQ increased by 1.311 units (*CI* = 95%). For every 1 unit increase in the mean NTS score (positive relationship), the mean OCQ increased by 0.664 (*CI* = 95%). The slope coefficients for years of experience ($p = 0.626$) and young adults ($p = 0.879$) were not statistically significant. Coefficients, confidence intervals, and statistical values are visualized in Table 2.

Table 2.

RQ2: Multiple Regression Results for Mean OCQ

Mean OCQ	β	95% CI for β		$SE\ \beta$	β	R^2	ΔR^2
		LL	*UL*				
Constant	2.16*	.97	3.35	.60		.36	.32
Experience	.008	-.03	.04	.02	.06		
Mean NTS	.664*	.36	.97	.15	.46*		
Young Adult	.045	-.55	.64	.30	.01		
Mature Adult	1.31**	.45	2.17	.43	.35**		

Note. β =unstandardized regression coefficient; CI = confidence interval; *LL* = lower limit; *UL* = upper limit; $SE\ \beta$ = standard error of the coefficient; β = standardized coefficient; R^2 = coefficient of determination (how much variability of a factor is caused by another factor); ΔR^2 =adjusted R^2; *$p < .001$. **$p < .05$.

Summary

Eighty-two MS nurses responded to this survey to determine if there was a relationship between teamwork (measured by the mean NTS score), age, years of experience, and MS nurses' intentions to stay in an acute care hospital. Research question one asked, "What is the relationship between teamwork and MS nurses' intentions to stay in acute care hospitals?" When reviewing the linear regression results for RQ1, the null hypothesis was rejected, and there was a statistically significant relationship between

teamwork and MS nurses' intentions to stay in an acute care hospital ($p < .001$; CI = 95%). Teamwork explained 22.6% of the variation in MS nurses' intentions to stay in their roles in acute care hospitals.

Research question two was as follows: "What is the relationship between MS nurses' years of experience, age, and MS nurses' intentions to stay in acute care hospitals?" A multiple regression analysis of RQ2 also revealed a rejection of the null hypothesis. The multiple regression model for age, years of experience, and the mean NTS explained 31.8% of the variance in the mean OCQ (nurses' intentions to stay in their role) with a statistical significance ($p < 0.001$). Mature age and the mean NTS (teamwork) contributed to the statistical significance of the model. However, complete responses for RQ2 were less than the goal of 77 (N=66) and the results should be reviewed with caution as the statistical analysis may have been slightly underpowered. Assumptions were met with one leverage point as an outlier that remained in the analysis. The threshold and the actual variance for the leverage point were somewhat small and all assumptions were otherwise met. In Chapter 5, I present the interpretation of the findings, limitations of the study, recommendations, implications, and a conclusion of the results.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

In recent years, the nursing profession has experienced an exacerbation of an ongoing shortage, which has been amplified across MS nursing departments of acute care hospitals (Keith et al., 2021; Kim et al., 2021; Steele-Moses, 2021; Zaheer et al., 2021). With MS nurses representing the largest workforce within acute care hospitals (American Academy of Medical-Surgical Nurses, 2019), hospital administrators are tasked with identifying strategies to improve MS nurses' intentions to stay in their roles. I explored the relationship between teamwork (measured mean NTS), age, years of experience, and MS nurses' intentions to stay in acute care roles (measured by mean OCQ). Key findings in this study included a statistically significant relationship between teamwork (mean NTS), mature age, and MS nurses' intentions to stay in their roles in acute care hospitals (mean OCQ). In Chapter 5, I present an interpretation of the key findings of this study, limitations of the study, recommendations, implications, and a conclusion of the study analysis and findings.

Interpretation of the Findings

My findings were consistent with similar studies. Teamwork is often associated with nursing satisfaction and retention, as well as improved patient and nursing outcomes (Baker et al., 2006; Bragadóttir et al., 2023; Rosen et al., 2018; Zhao et al., 2020). Keith et al. (2021) found that millennial nurses often leave their roles in the first few years, consistent with the findings of my study that there is a statistically significant and

positive linear relationship between mature MS nurses (more than 55 years of age) and the mean OCQ (intention to stay).

Teamwork was consistently associated with improved nurse and patient outcomes in the literature, including job satisfaction and nurses' intentions to stay in their roles (Al-Sabei et al., 2021; Bragadóttir et al., 2023; Cho et al., 2021; Costello et al., 2021). Additionally, older nurses were more likely to stay in their roles (Kiel, 2020; Steele-Moses, 2021; Zaheer et al., 2021). My study confirmed these findings in both the linear and multiple regression analysis, with statistically significant relationships between teamwork ($p < 0.001$), mature age ($p < 0.003$), and MS nurses' intentions to stay in their acute care roles in a hospital. Higher teamwork scores and age (specifically nurses aged 55 years and older) were associated with higher MS nurses' intentions to stay in their roles in acute care hospitals.

Several studies not specific to MS nurses revealed that turnover was higher among newer nurses, indicating that years of experience may contribute to nurses' intentions to stay (Brook et al., 2019; Keith et al., 2021; Kiel, 2020; Kim et al., 2021; Steele-Moses, 2021). However, in my analysis of MS nurses, I was unable to confirm similar findings for years of experience in the multiple regression analysis of RQ2. Years of experience were not statistically significant within the model, although the overall model was statistically significant. Steele-Moses (2021) was the only contributor I could find to address the topic of nurses' intentions to stay specific to the MS nursing population. Additionally, I could only find one study within the nursing literature that

measured intentions to stay using the OCQ, which focused on nursing faculty (Myint et al., 2023).

The theoretical basis for this study was CAS (from complexity science). I drew parallels from both teamwork and nurses' intentions to stay from the definition provided by Kash et al. (2018), who noted teamwork is people working together to achieve a goal. Chaffee and McNeill (2007) suggested that nursing departments can be CAS, with the interactions or behaviors between the nurse and the environment contributing to outcomes. Homeostasis is achieved by emergent behaviors within the CAS, and subsystems such as age and life experience may also be contributors (Chaffee & McNeill, 2007). Adapting CAS theory to the concepts of my study, I found that emergent behaviors, which I would associate with teamwork and the human system of age, contributed to the outcome, or homeostasis, of MS nurses' intentions to stay in their roles. The positive relationship between the variables age and teamwork on MS nurses' intentions to stay in their roles aligned well with the use of a nursing team or system as a CAS for the measurement of outcomes.

Limitations of the Study

I chose convenience sampling through a web-based survey and a cross-sectional design for this study to promote the feasibility of a time-limited survey. However, both were limitations of the study. Convenience sampling and web-based surveys may not represent the population as a whole and may contribute to bias and a threat to validity in responses from participants. This method of sampling was mitigated as much as possible by ensuring that nurses from across the US were invited to participate in the survey.

Additionally, a cross-sectional survey does not allow for true cause-and-effect relationships due to the time-limited nature of the data collection.

Other limitations included a smaller-than-optimal sample size and one leverage point outlier for RQ2. The sample size was likely impacted by the number of questions in the survey (58 questions). Although the survey was estimated to take less than 9 minutes, I analyzed 66 responses in the multiple regression analysis for RQ2, leaving the results underpowered. I also had a single leverage point outlier (.026 with .02 being the cutoff value) for the multiple regression (RQ2). This outlier can affect the slope of a regression analysis and indicate bias in the analysis (Laerd, 2015). However, I chose to include this data in the analysis as there was a small difference in the cutoff value, and there were no other outliers.

Recommendations

The results of this study support the need for additional research regarding the relationships between teamwork, age, and years of experience on MS nurses' intentions to stay in their acute care roles in hospitals. Future research using a longitudinal design could allow for the potential of identifying a more cause-and-effect relationship between the variables. I also recommend larger population samples from across the US to ensure generalizability to the MS nursing population. To further mitigate any bias or outliers, future research could include a random sample rather than a convenience sample.

Additionally, I recommend that researchers continue to validate the findings of my study, aligning with the previous findings in the literature for teamwork and age. I suggest future studies continue to explore the discrepancies in my findings from the

literature on years of experience as a factor in MS nurses' intentions to stay in acute care hospitals. In order to fully understand what may be needed to improve MS nursing retention, researchers should consider additional factors to explore in relation to MS nurses' intentions to stay in acute care hospitals.

Implications

The positive social implications of this study may improve mortality, patient access, and nurse's well-being. Needleman et al. (2020) found that organizations with high nursing turnover also reported high mortality rates and longer lengths of stay. Additionally, reduced staffing contributes to poor delivery of healthcare services as well as negative patient and nursing outcomes (Cho et al., 2020; Sanborn, 2023). Identifying factors and strategies to mitigate the MS nursing workforce shortage has positive implications for the health of patients across the US. A stronger MS nursing workforce ensures there is less disruption to the delivery of essential nursing care (Sanborn, 2023).

I determined there was a positive relationship between mature age (age 55 years and older), teamwork, and MS nurses' intentions to stay in their roles in acute care hospitals. The implications of this finding are important for hospital administrators, nursing leaders, nursing educators, and nurse researchers. Each of these groups should seek to understand factors associated with improving MS nurses' intentions to stay in acute care hospitals.

Methods for improvement include ongoing research and continued efforts to validate that teamwork and age are reliable factors in mitigating this MS nursing shortage. Nursing leaders and educators should focus on specific actions to improve

teamwork in MS nursing departments to improve MS nurses' intentions to stay in their roles in acute care hospitals. A better understanding of the needs of younger nurses is also implicated in the findings of this study. Nursing leaders and educators should explore the factors that influence younger MS nurses' intentions to stay versus middle and older nurses in order to build a strategy that focuses on retaining younger and middle-aged nurses (Keith et al., 2021; Kiel et al., 2020).

Adapting the theoretical foundation of CAS as an operational system for the hospital and MS nursing environments may contribute to improved MS nurses' intentions to stay in their roles. The implications of the CAS framework include incorporating the elements of teamwork behaviors that can lead to self-organization amongst nursing staff and the stability of departments (Chaffee & McNeill, 2007). Complexity thinking, as in a CAS, includes building relationships and promoting stability of the system (Chaffee & McNeill, 2007).

Conclusion

Sanborn (2023) calls the current shortage of nurses a public health crisis. Medical-surgical nurses are integral to the safe delivery of care, making up the largest workforce in acute care hospitals (Academy of Medical Surgical Nurses, 2019). However, MS nurses are in the greatest demand (Carbajal, 2023). Focusing on these realities, it is imperative for nursing leaders to further explore factors that influence MS nurses' intentions to stay in their roles in acute care hospitals. Based on the findings of this study, age and teamwork are factors that should be explored further to improve the outlook for patients in MS units of acute care hospitals.

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Appendix A: Letter Content to Chief Nursing Officers to Facilitate Recruitment

Dear nursing colleagues,

Please find information about a survey that explores the relationship between teamwork, age, years of experience, and medical-surgical nurses' intentions to stay in an acute care hospital environment. The aim is to identify any relationships between these variables to identify potential strategies for retention of medical-surgical nurses. In order to recruit participants, I ask that you post the attached flyer (Appendix B) on your medical-surgical departments for nurses who meet criteria and are comfortable participating. The link or QR code will guide participants to the survey.

About the study:

- 58 question survey that should take approximately 10-15 minutes.
- All participation is voluntary.
- Participant privacy is protected, and the published study will not include any names or details that identify the participant.

Volunteers must meet these requirements:

- Participants must be an RN or LPN currently working on a medical-surgical unit of an acute care hospital with six months of nursing experience.

This study is part of the doctoral requirements for a PhD student at Walden University. The study will take place during the month of June.

Participants are welcome to share the survey link with others who may be interested in taking the survey.

Thank you for your interest and support!

Appendix B: Participant Recruitment Flyer

MEDICAL-SURGICAL NURSING TEAMWORK AND COMMITMENT SURVEY

Medical-Surgical Nurses are Invited to Share Their Perception of Nursing Teamwork and Commitment

You are being invited to participate in a survey that aims to provide an understanding of the current work environment and to develop potential strategies for improvement. This is an academic study, and results will be shared with a large audience. However, your identification/name will not be asked for in the survey and your identity will be protected. I am not permitted to share any identifying information and you will not be asked to share your name. If you have questions or concerns related to this study, please reach out to Kim Reddish at kimberly.reddish@waldenu.edu. Participation is voluntary and anonymous. All data will be kept secure by password protection and will not be used for any purpose outside of this study.

Who Can Take the Survey?

- RN or LPN
- Currently working in an acute care (hospital) medical-surgical dept.
- 6 months experience or more in medical-surgical nursing

All participation is voluntary, and surveys are 100% anonymous. Participation has no effect on your current or future employment!

Thank you in advance!

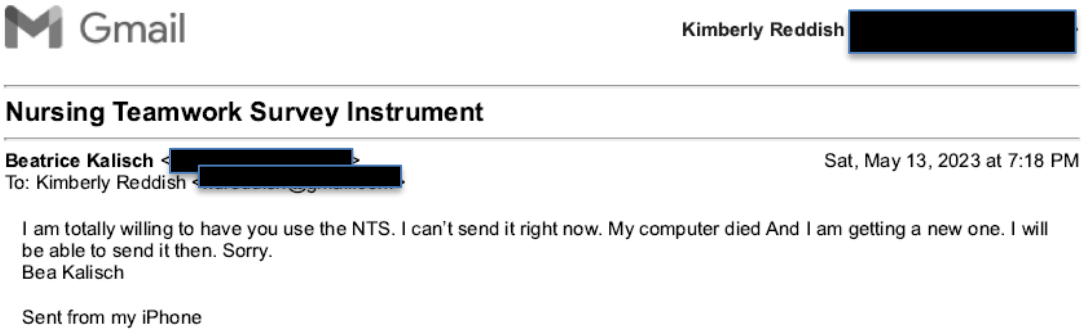
Survey link/QR code below:

https://www.surveymonkey.com/r/BDT9KZ8

Appendix C: Demographic Data

Demographic Data	n	%	Mean	Median	Mode	*SD*
Education						
Doctorate	2	2.7				
Masters of Science	7	9.6				
Bachelor degree	34	46.6				
Associates degree	27	37.7				
Licensed (LPN)	1	1.4				
Diploma nurse	2	2.7				
Age						
Young Adult (20-35 yrs)	27	36				
Middle Adult (36-55 yrs)	39	53				
Mature Adult (over 55 yrs)	8	11				
Experience on Unit						
6-11 months	10	13.5				
1-2 years	18	24.3				
> 2 years and < 5 years	17	23				
> 5 years and < 10 years	11	14.9				
> 10 years	18	24.3				
Years of Experience as a Nurse (LPN & RN total)	66		12.13	11	8	9.32

Appendix D: Permission for Use of the Nursing Teamwork Survey



Gmail Kimberly Reddish [redacted]

Nursing Teamwork Survey Instrument

Beatrice Kalisch <[redacted]> Sat, May 13, 2023 at 7:18 PM
To: Kimberly Reddish <[redacted]>

I am totally willing to have you use the NTS. I can't send it right now. My computer died And I am getting a new one. I will be able to send it then. Sorry.
Bea Kalisch

Sent from my iPhone

Appendix E: Nursing Teamwork Survey Sample Items

The following items represent sample questions from the NTS (Kalisch et al., 2010).

Mutual Trust (subscale)	Rarely	25% of the time	50% of the time	75% of the time	Always
Team members trust each other.					
Team members value, seek, and give each other constructive feedback.					

Team Orientation (subscale)	Rarely	25% of the time	50% of the time	75% of the time	Always
Most team members tend to avoid conflict rather than dealing with it.					
Some team members spend extra time on breaks.					

Backup (subscale)	Rarely	25% of the time	50% of the time	75% of the time	Always
My team believes that to do a quality job, all of the members need to work together					
Team members notice when a member is falling behind in their work.					

Shared Mental Model (subscale)	Rarely	25% of the time	50% of the time	75% of the time	Always
Team members respect one another.					
All team members understand what their responsibilities are throughout the shift.					

Team Leadership (subscale)	Rarely	25% of the time	50% of the time	75% of the time	Always
The nurses who serve as charge nurses or team leaders balance workloads within the team.					

Appendix F: Use of the Organizational Commitment Questionnaire

PsycTESTS

Organizational Commitment Questionnaire

PsycTESTS Citation:
Mowday, R. T., Steers, R. M., & Porter, L. W. (1979). Organizational Commitment Questionnaire [Database record]. Retrieved from PsycTESTS. doi: https://dx.doi.org/10.1037/t08840-000

Instrument Type:
Inventory/Questionnaire

Test Format:
Organizational Commitment Questionnaire items are rated on a 7-point Likert scale with the following anchors: Strongly agree, moderately agree, slightly agree, neither agree nor disagree, slightly disagree, moderately disagree, strongly disagree.

Source:
Mowday, Richard T., Steers, Richard M., & Porter, Lyman W. (1979). The measurement of organizational commitment. Journal of Vocational Behavior, Vol 14(2), 224-247. doi: https://dx.doi.org/10.1016/0001-8791(79)90072-1, © 1979 by Elsevier. Reproduced by Permission of Elsevier.

Appendix G: Organizational Commitment Survey Sample Items

The following items represent sample items from the OCQ (Mowday et al., 1979).

Responses are scored on the following scale:

1= strongly disagree
2= moderately disagree
3= slightly disagree
4= neither disagree nor agree
5= slightly agree
6= moderately agree
7= strongly agree
(R) denotes a negatively phrased and reverse scored item

	1	2	3	4	5	6	7
I am proud to tell others I am part of this organization.							
I find that my values and the organizations' values are very similar.							
I feel very little loyalty to this organization. (R)							

Appendix H: Social Media Post (Walden IRB Change of Procedure)

Medical-Surgical Nurses are Invited to Share Their Perception of Nursing Teamwork and Commitment

If you meet the criteria described below, please consider participating in this doctoral study and/or sharing it via social media/messaging with others who meet the criteria. Your participation is appreciated! However, you **are not** permitted to post this flyer at a place of employment.

MEDICAL-SURGICAL NURSING TEAMWORK AND COMMITMENT SURVEY

You are invited to participate in a 10-minute survey that aims to provide an understanding of the current work environment to enable leaders understand how to improve the workplace. This is an academic study for Kimberly Reddish, a student at Walden University.

Your identification/name will not be asked for in the survey and your identity will be protected.

If you have questions or concerns related to this study, please reach out to the student researcher at kimberly.reddish@waldenu.edu, or you may speak privately to Walden University's Research Participant Advocate at 612-312-1210 or email IRB@mail.waldenu.edu. Informed consent information will precede the survey questions at the link or QR code provided in this posting.

Survey link: https://www.surveymonkey.com/r/BDT9KZ8

Who Can Take the Survey?

- RN or LPN
- Currently working in an acute care (hospital) medical-surgical dept.
- 6 months experience or more in medical-surgical nursing

All participation is voluntary, and surveys are 100% anonymous.

Thank you in advance!

QR Code: